LSW ARCHITECTS

PROJECT MANUAL

for

Longview Public Schools
Memorial Stadium Upgrades

Bid Set

January 6, 2025
LSW Project No. 2024-0014

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PROJECT INFORMATION

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

A. Project Name: Memorial Stadium Upgrades, located at: 2853 Hudson Street, Longview, WA 98632..

B. The Owner, hereinafter referred to as Owner: Longview Public Schools

1.02 PROJECT DESCRIPTION

A. Summary Project Description: See Section 01 10 00 - Summary for project description.

B. Contract Scope: Construction, demolition, and renovation.

C. Contract Terms: Lump sum (fixed price, stipulated sum).

1.03 PROCUREMENT TIMETABLE

A. Pre-Bid Walk-through: 10:00 A.M., Wednesday, January 29th, 2025.

B. Last Request for Substitution Due: 3:00 P.M., Friday, February 7th, 2025.

C. Last Request for Information Due: 3:00 P.M., Friday, February 7th, 2025.

D. Date of Last Addendum: Wednesday, February 12th, 2025.

E. Bid Due Date: Prior to 2:00 P.M., Wednesday, February 19th, 2025.

F. Substantial Completion Date: Friday, August 15th, 2025.

G. The Owner reserves the right to change the schedule or terminate the entire procurement process at any time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 00 01 03
PROJECT DIRECTORY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Identification of project team members and their contact information.

1.02 OWNER:

A. Name: Longview Public Schools
   1. 2715 Lilac Street
   2. Longview, Washington 98682
   3. Telephone: 360-575-7991
   4. Contact:

1.03 CONSULTANTS:

A. Architect: Design Professional of Record. All correspondence from the Contractor regarding construction documents authored by Architect's consultants will be through this party, unless alternate arrangements are mutually agreed upon at preconstruction meeting.
   1. LSW Architects, PC.
      a. 610 Esther Street, Suite 200.
      b. Vancouver, WA 98660.
      c. Telephone: 360-694-8571.
   2. Primary Contact:
      a. Project Architect: Carrie McIntyre, carrie@lsw-architects.com.

B. Civil / Landscape Architecture Consultant:
   1. RWD Landscape Architects.
      a. 4405 7th Ave. SE, Suite 203.
      b. Lacey, WA 98503.
      c. Telephone: 360-456-3813.
   2. Primary Contact:
      a. Johnal Hayes, jonah@rwdroll.com.

C. Structural Engineering Consultant:
   1. Kramer Gehlen & Associates.
      a. 400 Columbia Street, Suite 240.
      b. Vancouver, WA 98660.
      c. Telephone: 360-693-1621.
   2. Primary Contact:
      a. Principal: David Aronson, davida@kramer-gehlen.com.

D. Mechanical Engineering Consultant - Plumbing:
   1. MKE & Associates, Inc.
      a. 6915 SW Macadam Ave, Suite 200.
      b. Portland, OR 97219.
      c. Telephone: 503-892-1188.
   2. Primary Contact:
      a. Matt Baker, mattb@mke-inc.com.

E. Mechanical Engineering Consultant - HVAC:
   1. MKE & Associates, Inc.
      a. 6915 SW Macadam Ave, Suite 200.
      b. Portland, OR 97219.
      c. Telephone: 503-892-1188.
   2. Primary Contact:

a. Matt Baker, mattb@mke-inc.com.

F. Electrical Engineering Consultant:
1. MKE & Associates, Inc.
a. 6915 SW Macadam Ave, Suite 200.
b. Portland, OR 97219.
c. Telephone: 503-892-1188.
2. Primary Contact:
a. Mark Garand, markg@mke-inc.com.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

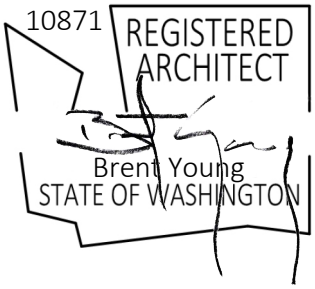
SECTION 00 01 07
SEALS PAGE - ARCHITECT

ARCHITECT

1.01 ARCHITECT

LSW Architects
610 Esther Street, Suite 200
Vancouver, Washington 98660
360-694-8571

SEAL:



END OF SECTION

SECTION 00 01 07.02
SEALS PAGE - LANDSCAPE

LANDSCAPE

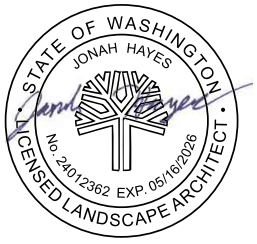
1.01 LANDSCAPE ARCHITECT

RWD Landscape Architects
4405 7th Ave. SE, Suite 203
Lacey, WA 98503
360-456-3813

2.01 SECTIONS INCLUDED UNDER THIS SEAL:

A.	033001	Site Cast In Place Concrete
B.	033100	Site Concrete Formwork
C.	033110	Site Concrete Reinforcement
D.	033140	Site Concrete Curing
E.	033173	Concrete Paving Joint Sealants
F.	311000	Site Clearing
G.	312000	Earth Moving
H.	314400	Topsoil Placement & Landscape Grading
I.	321413	Unit Pavers
J.	323113	Chain Link Fencing
K.	329200	Turf And Grasses
L.	334000	Stormwater Utilities

SEAL:



END OF SECTION

SECTION 00 01 07.05
SEALS PAGE - PLUMBING

PLUMBING

1.01 PLUMBING ENGINEER

MKE & Associates, Inc.
6915 SW Macadam Avenue, Suite 200
Portland, Oregon 97219
503-892-1188

2.01 SECTIONS INCLUDED UNDER THIS SEAL:

A.	22 00 00	Basic Plumbing Requirements
B.	22 05 29	Hangers and Support for Plumbing Piping and Equipment
C.	22 07 19	Plumbing Piping Insulation
D.	22 10 05	Plumbing Piping
E.	22 40 00	Plumbing Fixtures

SEAL:



01/06/2025

END OF SECTION

SECTION 00 01 07.07
SEALS PAGE - ELECTRICAL

ELECTRICAL

1.01 ELECTRICAL ENGINEER

MKE & Associates
6915 SW Macadam Avenue, Suite 200
Portland, Oregon 97219
503-892-1188

2.01 SECTIONS INCLUDED UNDER THIS SEAL:

A.	26 00 01	Basic Electrical Materials and Methods
B.	26 05 01	Electrical Demolition
C.	26 05 19	Low-Voltage Electrical Power Conductors and Cables
D.	26 05 26	Grounding and Bonding for Electrical Systems
E.	26 05 29	Hangers and Supports for Electrical Systems
F.	26 05 34	Conduit for Electrical Systems
G.	26 05 35	Surface Raceways for Electrical Systems
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J.	26 05 83	Wiring Connections
K.	26 09 43	Digital Network Lighting Control Devices
L.	26 24 16	Panelboards
M.	26 27 26	Wiring Devices
N.	26 51 00	Lighting

SEAL:



01/06/2025

END OF SECTION

SECTION 00 01 07.08
SEALS PAGE - COMMUNICATIONS

ELECTRICAL

1.01 ELECTRICAL ENGINEER

MKE & Associates
6915 SW Macadam Avenue, Suite 200
Portland, Oregon 97219
503-892-1188

2.01 SECTIONS INCLUDED UNDER THIS SEAL:

A. 27 05 28 Pathways for Low Voltage Systems Cabling

B. 27 10 00 Structured Cabling

SEAL:



01/06/2025

END OF SECTION

ADVERTISEMENT FOR BIDS

Owner: Longview School District No. 122

Project Name: Memorial Stadium Upgrades

Project No.: 2024-0014

Project Location: Memorial Stadium, 2853 Hudson Street, Longview, WA 98632

Project Description: The Project includes the following work: exterior renovation of stadium, including new roof, entry gate, and ticket booth, as well as interior renovation of locker rooms, as further described in Bidding Documents.

A/E's estimate: $1,870,000 - $2,070,000

Date of Bid Opening: 2:00 P.M., Wednesday, February 19th, 2025

Bid Submittal: Sealed bids for construction of the Project are requested by the Longview School District No. 122 ("District" or "Owner"). **Bids must be received by Owner no later than 2:00 p.m. on February 19th, 2025, at the Longview School District MOTF Office, located at 2080 38th Avenue, Longview, Washington 98632.** Bids will then be publicly opened. Bids received after the date and hour above stated will not receive consideration.

Additional important information regarding bidding requirements is specified in the Instructions to Bidders.

Questions: Questions about this project should be directed to the project representative, Carrie McIntyre with LSW Architects, P.C., 610 Esther Street, Suite 200, Vancouver, Washington 98660; telephone (360) 694-8571; e-mail carrie@lsw-architects.com.

Pursuant to Board of Directors Policy 6220, "Bid or Request for Proposal Requirements," and RCW 39.80.040, the District encourages minority, women, and veteran-owned businesses to respond this bid request.

Mandatory Pre-Bid Site Meeting: The Project site is available for inspection by prospective bidders at a mandatory pre-bid site meeting and walkthrough. **All prospective bidders must attend the meeting to occur at the Project site stated above at 10:00 A.M., on January 29th, 2025.** This will be the only opportunity for bidders to visit the Project site. Bids received from bidders who did not attend one of the mandatory pre-bid site meetings will not be considered.

Bid Documents: The plans and specifications for the Project are available on the Owner's website at https://www.longviewschools.com/departments/business-services/bids-proposals.

Bid Guarantee: A surety company bid bond on a form acceptable to Owner or a certified or bank cashier's check payable to the order of Longview School District No. 122, must accompany each bid in an amount not less than five percent (5%) of the Base Bid. No bidder may withdraw its bid after the hour set for the opening thereof, unless the award of the Contract is delayed for a period exceeding 45 days.

Apprentice Utilization: Mandatory apprentice utilization of at least 15 percent of the total labor hours worked on the Contract is required. Apprentices must be registered as apprentices with the State Apprenticeship and Training Council. Bidders may contact the Department of Labor & Industries' Apprenticeship Section at (360) 902-5320 to obtain information on apprenticeship programs. The Contract includes monetary incentives for meeting the goals and monetary penalties for not meeting the goals.

Rejection of Bids; Waiver: The Owner reserves the right to reject any or all bids and to waive as an informality any irregularities in the bids received.

Date(s) of Publication: January 14th 2025 and January 21st, 2025

END OF SECTION

INSTRUCTIONS TO BIDDERS

1.01 DEFINITIONS

A. All definitions set forth in the General Conditions or in other proposed Contract Documents are applicable to the Bidding Documents.

B. "Addenda" are written or graphic instruments issued by the Longview School District prior to the execution of the Contract that 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.

C. 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 a corresponding change in the Work, as described in the Bidding Documents, is accepted by the Longview School District.

D. "Award" means the formal decision by the Longview School District notifying a responsible Bidder with the lowest Responsive Bid of the Longview School District's acceptance of the Bid and intent to enter into a contract with the Bidder. A contract is only formed upon execution of the Contract, and not simply by Award.

E. A "Bid" is a complete and properly signed proposal to perform 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.

F. 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 or from which work may be deleted for sums stated in Alternate Bids.

G. A "Bidder" is a person or entity who submits a Bid for a prime contract with the Longview School District for the Work described in the Contract Documents.

H. 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, and the Contract Documents, including any Addenda issued prior to receipt of Bids.

I. The "Contract Documents" for the Work consist of the Advertisement for Bids; Instructions to Bidders; completed Bid Form; AIA Document A101-2017, "Standard Form of Agreement Between Owner and Contractor," as modified by Owner; AIA Document A201-2017, "General Conditions of the Contract for Construction," as modified by Owner; Supplemental Conditions, if any; other Special Forms; Drawings, and Specifications; and all addenda and modifications thereof.

J. The "Owner" is the Longview School District No. 122, a Washington quasi-municipal corporation.

K. To be considered "Responsible" or meet "Responsibility" requirements, a Bidder must meet the criteria established in RCW 39.04.350 (as it exists at the time of advertisement for bids). That statute requires that the Bidder:

   1. At the time of Bid submittal, have a certificate of registration in compliance with Chapter 18.27 RCW, a plumbing contractor license in compliance with Chapter 18.106 RCW, an elevator contractor license in compliance with Chapter 70.87 RCW, or an electrical contractor license in compliance with Chapter 19.28 RCW, as required under the provisions of those chapters;

   2. Have a current state unified business identifier (UBI) number;

3. If applicable, have industrial insurance coverage for the Bidder's employees working in Washington as required in Title 51 RCW;

4. Have an Employment Security Department (ESD) number as required in Title 50 RCW;

5. Have a state excise tax registration number as required in Title 82 RCW;

6. Not be disqualified from bidding on any public works contract under RCW 39.06.010 (unregistered or unlicensed contractors) or RCW 39.12.065(3) (prevailing wage violations);

7. 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;

8. Have received training on the requirements related to public works and prevailing wage under Chapter 39.04 RCW and Chapter 39.12 RCW and designated a person or persons to be trained on those requirements in a manner meeting requirements of the Department of Labor and Industries ("Department"), except that 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 requirement; and

9. 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 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 chapters 49.46, 49.48, or 49.52 RCW.

10. In addition, a Bidder must meet the following supplemental responsible bidder criteria applicable to this Project adopted by the Owner to the satisfaction of the Owner:

    a. The ability, capacity, and skill to perform the Contract;

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

    c. Whether the Bidder can perform the Contract within the time specified;

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

    e. The quality of performance of previous contracts, including demonstration of successful completion of similar projects in the last three (3) years;

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

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

    h. The Bidder's principals will not be excluded or disqualified from Covered Transactions under 2 C.F.R. Part 180 and 2 C.F.R. Part 3000;

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

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

L. 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.

M. 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. The Owner reserves the right to reject at any time, without impairing the balance of the proposal, any or all such predetermined unit prices.

N. The term “day” as used in the Bidding Documents means a calendar day unless otherwise specifically defined.

1.02 BIDDER’S REPRESENTATIONS

A. By making its Bid, each Bidder represents that:

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

2. **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.

3. **PRE-BID MEETING.** The Bidder has attended any pre-bid meeting(s) required by the Bidding Documents.

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

5. **EXAMINATION.** The Bidder has carefully examined and understands the Bidding Documents, the Contract Documents (including, without limitation, any liquidated damages, indemnification, and insurance provisions), the Project site, including any existing buildings; 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 has satisfied itself as to the nature, location, character, quality, and quantity of the Work and the labor, materials, equipment, goods, supplies, work, services, and other items to be furnished, as well as 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 to fully acquaint itself with any applicable condition or matter will 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.

6. **PROJECT MANUAL.** The Bidder has checked its copies of the Project Manual with the Table of Contents bound therein to ensure the Project Manual is complete.

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.

8. **LICENSE REQUIREMENTS.** Bidders and their proposed Subcontractors will be registered and will hold such licenses as may be required by the laws of Washington, including Chapter 18.27 RCW, for the performance of the Work specified in the Contract Documents.

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.

1.03 BIDDING DOCUMENTS

A. COPIES

1. **Deposit.** 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.

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. **Complete Sets.** Bidders will 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; the Owner does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete and/or superseded sets of Bidding Documents. Printed copies of plans take precedence over any online images.

4. **Conditions.** The Owner makes 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.

5. **Legible Documents.** To the extent any Drawings, Specifications, or other Bidding documents are not legible, it is the Bidder's responsibility to notify the Owner and to obtain legible documents from the plan center.

B. INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

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.

2. **Notify Owner.** Bidders and Sub-bidders will promptly notify the Owner in writing of any ambiguity, inconsistency, or error that they may discover upon examination of the Bidding Documents or of the site and local conditions. All Bidders and Sub- bidders will thoroughly familiarize themselves with specified products and installation procedures and submit to the Owner any objections (in writing) no later than ten (10) 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. **Written Request.** Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents will make a written request, which must be received by the Owner at least ten (10) calendar days prior to the date for receipt of Bids.

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

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

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.

C. SUBSTITUTIONS

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.

2. **Substitution procedure.** No substitution will be considered prior to receipt of Bids unless the Owner receives a written request for approval on the Owner's Substitution Request form for the Project, with all data requested on the form completed, at least seven (7) days prior to the date for receipt of Bids. Each such request will be submitted with a Request for Substitution form identical to or equivalent in content to the form found in the Project Manual, and will 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 will 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. The Owner's decision to approve or disapprove a proposed substitution will be final. Written requests for approval will 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.

3. **Addendum.** If the Owner approves a proposed substitution prior to receipt of Bids, the approval will be set forth in a written Addendum. Bidders will not rely upon approvals made in any other manner. Substitution request forms returned by the Owner are a courtesy only, and Bidders/Sub-bidders will rely solely on substitution approvals listed in an Addenda.

4. **Post-Bid Substitutions.** After the Contract has been executed, the Owner 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.

D. ADDENDA

1. **Written.** All Addenda will be written. They will be mailed, emailed, faxed, delivered, and/or posted electronically with notice to those the Owner knows to have received a complete set of Bidding Documents.

2. **Copies.** Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

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

1.04 BIDDING PROCEDURE

A. FORM AND STYLE OF BIDS

1. **Form.** Bids (including any required attachments) will be submitted on forms identical to the form included with the Bidding Documents. Bids on different forms may be rejected. No oral, email, or telephonic responses or modifications will be considered to be Bids.

2. **Completion of Form.** All blanks on the Bid form will be filled in by typewriter or manually in ink.

3. **Words and Figures.** Where so indicated by the makeup of the Bid form, sums will 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 will govern and the words will 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 will govern.

4. **Initial Changes.** Any interlineation, alteration, or erasure must be initialed by an authorized representative of the Bidder.

5. **Alternates and Unit Prices.** All requested Alternates and unit prices should be bid. The Owner 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.

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

7. **Identity of Bidder.** The Bidder will include in the specified location on the Bid form the legal name of the Bidder and, if requested, a description of the Bidder as a sole proprietor, a partnership, a joint venture, a corporation (including the state of incorporation), or another described form of legal entity. The Bid will be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid submitted by an agent will have a current power of attorney attached certifying the agent’s authority to bind the Bidder, and provide other information requested.

8. **Taxes.** The Bid will include in the sum stated all taxes imposed by law, EXCEPT STATE AND LOCAL SALES TAX ON THE CONTRACT SUM.

9. **Bid Breakdown.** The Bid form may contain, for the Owner’s accounting purposes only, a breakdown of some or all of the components included in the Base Bid.

B. POTENTIAL LISTING OF SUBCONTRACTORS

1. **Procedure.** On certain projects of the Owner, the Bid form includes a requirement that certain Subcontractors be listed, and the list must be submitted to the Owner. In these circumstances, the Bidder must 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: HVAC (heating, ventilation, and air conditioning); plumbing as described in Chapter 18.106 RCW; electrical work as described in Chapter 19.28 RCW; structural steel installation and rebar installation; and any other categories of Work listed on the Subcontractor listing form.

a. **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.

b. **IF NO SUBCONTRACTORS:** If there is no work to be performed by a HVAC, plumbing, electrical, or other Subcontractor category identified on the Bid form, the Bidder should insert "None" or "N/A" on the Bid form. If a category is left blank, that will indicate that the Bidder believes that there is no Work to be performed by that trade.

c. **MULTIPLE ENTRIES:** The Bidder will 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 will 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 will be utilized depending upon the selection of Alternates.

d. **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, the Owner will consider that there is no change in the Subcontractors from those listed with the base Bid.

2. **Failure to Submit.** In accordance with RCW 39.30.060, failure of a Bidder to submit as part of the Bid the names of such proposed HVAC, plumbing, electrical, and structural steel 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, will render the Bidder's Bid nonresponsive and, therefore, void.

3. **Requirement to Subcontract.** The Bidder, if awarded the Contract, will subcontract with the listed Subcontractor for performance of the portion of the Work designated on the Bid Form, subject to the provisions of the Contract for Construction and RCW 39.30.060. The Bidder will not substitute a listed Subcontractor in furtherance of bid shopping or bid peddling.

4. **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), the Owner may require the Bidder to replace the Subcontractor with a Subcontractor acceptable to the Owner at no change in the Contract Sum or Contract Time.

5. **Subcontractor Standards.** Subcontractors will meet contractual and technical qualifications standards, and provide specialized certification, licensing, and/or payment and performance bonding where specified.

C. BID SECURITY

1. **Purpose and Procedure.** Each Bid will be accompanied by a bid security payable to the Owner in the form required in the Bidding Documents and equal to five percent (5%) of the Base Bid (and excluding Washington State sales tax). The bid security constitutes a pledge that the Bidder will enter into the Contract with the Owner 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 by 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 will be forfeited to the Owner 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 the Owner.

2. **Form.** The bid security will be in the form of a certified or bank cashier's check payable to the Owner or a bid bond executed by a bonding company acceptable to the Owner and licensed in Washington State on the form included with the Bidding Documents or on an acceptable and

equivalent form. The Attorney-in-Fact who executes the bond on behalf of the surety will be licensed to do business in Washington State and will affix to the bond a certified and current copy of his or her Power of Attorney.

3. **Retaining Bid Security.** The Owner 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; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected.

4. **Return of Bid Security.** Within forty-five (45) days after the Bid Date, the Owner 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 time all Bid securities not forfeited will be returned.

D. SUBMISSION OF BIDS

1. **Procedure.** The Bid, the Bid security, and any other documents required to be submitted with the Bid will be enclosed in a sealed, opaque envelope. The envelope will be addressed to the party specified in the Advertisement or Invitation to Bid and will be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope will be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

2. **Deposit.** Bids will be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Advertisement or Invitation to Bid, or any extension thereof made by Addendum. Bids received after the time and date for receipt of Bids may be opened, retained unopened, or returned (open or unopened), all at the discretion of the Owner.

3. **Responsibility.** The Bidder assumes full responsibility for timely delivery at the location designated for receipt of Bids.

4. **Form.** Oral, fax, telephonic, email, electronic, or telegraphic Bids are invalid and will not be considered.

E. MODIFICATION OR WITHDRAWAL OF BID

1. **After Receipt Deadline.** A Bid may not be modified, withdrawn, or canceled by the Bidder during a forty-five (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.

2. **Before Receipt Deadline.** Prior to the time and date designated for receipt of Bids, any Bid submitted may be modified or withdrawn only by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice will be in writing over the signature of the Bidder or by telegram or fax; if by telegram or fax, written confirmation over the signature of the Bidder will be mailed and postmarked on or before the date and time set for receipt of Bids. The notice will be worded so as not to reveal the amount of the original Bid. Email notice will not be considered. It will be the Bidder's sole responsibility to verify that the notice has been received by the Owner in time to be withdrawn before the Bid opening.

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. **Bid Security with Resubmission.** Bid security will be in an amount sufficient for the Bid as modified or resubmitted.

F. **NOTICE:** 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, express delivery, telegram, or fax. If the notice is by telegram 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.

1.05 CONSIDERATION OF BIDS

A. **Opening of Bids.** Unless stated otherwise in the Advertisement or Invitation to Bid or any 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.

B. **Rejection of Bids.** The Owner will 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.

C. **Acceptance of Bid (Award).**

1. **Owner.** The Owner 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. The Owner 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.

2. **Alternates.** The Owner will 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. The Owner retains the right to accept Alternate Bid items at the price bid within forty-five (45) days after the Agreement is executed.

3. **Requirements for Award.** Before the Award, the lowest Responsive Bidder will meet the Award Requirements.

D. BID PROTEST PROCEDURES

1. **Request for Copies of Bids.** Within two (2) business days of the bid opening, the Owner will provide, if requested by a Bidder, copies of all the bids received for the Project. The Owner will allow at least two (2) business days after providing copies of the bids before executing a Contract. (Intermediate Saturdays, Sundays, and legal holidays are not counted.)

2. **Procedure.** A Bidder protesting for any reason the Bidding Documents; a bidding procedure; the Owner's 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 any other aspect arising from or relating in any way to the bidding and award (or lack thereof), will cause a written protest to be filed with the Owner 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 either (a) the date upon which Bids are opened, or (b) when the Owner provides copies of the bids to those Bidders requesting bids under Paragraph 1.05(D)(1), above. (Intermediate Saturdays, Sundays, and legal holidays are not counted.) The written protest will 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 will be delivered to: **Patti Bowen, Executive Director of Business Services, 2715 Lilac Street, Longview, WA 98632**

3. **Consideration.** Upon receipt of the written protest, the Owner will consider the protest. The Owner may, within three (3) business days of the Owner's 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 the Owner, the Superintendent of the Owner or his or her 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 the Owner's receipt of the protest. (If more than one (1) protest is filed, the Owner's decision will be provided within six (6) business days of the Owner's receipt of the last protest.) If no reply is received from the Owner during the six (6) business-day period, the protest will be deemed rejected.

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

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

1.06 POST-BID INFORMATION

A. INFORMATION FROM APPARENT LOW BIDDER

1. **Submittal.** Within forty-eight (48) hours of the Owner's request, the apparent low Bidder and any other Bidders so requested will submit the following to the Owner:

   a. Additional information regarding the use of their own forces and the use of Subcontractors and suppliers;

   b. A properly executed Bidder Qualification Statement on the form provided (unless otherwise required to be submitted at the time of the Bid);

   c. 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;

   d. 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;

   e. If requested by the Owner, a detailed breakdown of the Bid in a form acceptable to the Owner;

   f. 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;

   g. The proprietary names and the suppliers of the principal items or systems of materials and equipment proposed for the Work;

   h. An Office of Superintendent of Public Instruction (OSPI) Form D-9, if requested;

   i. A signed statement in accordance with RCW 9A.72.085 verifying under penalty of perjury that the bidder is in compliance with the responsible bidder criteria of RCW 39.04.350(1)(g).

   j. A completed Apprenticeship Utilization Plan utilizing a form acceptable to the Owner.

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

2. **Responsibility.** The Bidder will be required to establish to the satisfaction of the Owner the reliability and Responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents and the qualifications set forth in the sections of the Project Manual pertaining to such proposed Subcontractors' respective trade(s). The Responsibility of the

Bidder may be judged in part by the Responsibility of these proposed entities. The following will be considered:

a. The ability, capacity, and skill to perform the Contract;

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

c. Whether the Bidder can perform the Contract within the time specified;

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

e. The quality of performance of previous contracts, including demonstration of successful completion of similar projects in the last three (3) years;

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

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

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

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

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

   a. 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 Bidder 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.

   b. The Bidder does not have sufficient capability to undertake the obligations of the Contract. A determination will be made when the Owner's 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.

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

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

   e. The Bidder has a history of unsatisfactory performance of contracts of this or similar nature, regardless of whether such contracts existed between the Owner and the Bidder, or other parties.

i. A determination of this nature will be made if the Owner, after review of the Bidder's 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. The Owner will give the Contractor an opportunity to explain such nonperformance's before any final determination is reached.

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

iii. In reaching its determination, the Owner 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.

4. **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 will include that each Subcontractor, at the time of subcontract execution, is Responsible and possesses an electrical contractor license, if required by Chapter 19.28 RCW, or an elevator contractor license, if required by Chapter 70.87 RCW, or a plumbing contractor license, if required by Chapter 18.106 RCW, and can obtain any payment and performance bonds required by the Bidding or Contract Documents.

5. **Request to Modify Criteria.** No later than ten (10) days prior to the Bid Date, a potential Bidder may request in writing that the Owner modify the Responsibility criteria listed in Paragraph 1.06(A)(2), above, or elsewhere in the Contract Documents or the Bidding Documents. The Owner 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, the Owner will issue an Addendum identifying the new criteria.

6. **Objection.** Prior to the Award of the Contract, the Owner will notify the Bidder in writing if the Owner, after due investigation, has reasonable objection to the Bidder or a person or entity proposed by the Bidder, and the Owner 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 the Owner, and the Owner will consider the additional information before issuing its final determination. The Bidder may, after the Owner's 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 1.05(D). In the event of withdrawal, Bid security will not be forfeited.

7. **Change.** Persons and entities proposed by the Bidder and to whom the Owner has made no reasonable objection must be used on the Work for which they were proposed and will not be changed except with the written consent of the Owner.

8. **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, the Owner will have the right to terminate the Contract for cause for the Contractor's breach, and the Owner may then pursue such remedies as exist elsewhere under the Contract, or as otherwise are provided at law or equity.

B. **INFORMATION FROM OTHER BIDDERS:** All other Bidders designated by the Owner as under consideration for award of a Contract will also provide a properly executed Contractor's Qualification Statement, if so requested by the Owner.

C. **BIDDING MISTAKES:** The Owner 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.

1.07 PERFORMANCE BOND; LABOR AND MATERIAL PAYMENT BOND

A. **Bond Requirements.** Within twenty-four (24) hours after the issuance of the Owner's notice of intent to award the Contract, and prior to the date of execution of the Contract, the Bidder will furnish evidence satisfactory to the Owner of its ability to obtain statutory bonds pursuant to Chapter 39.08 RCW covering the faithful performance of the Contract and the payment of all obligations arising thereunder in the form prescribed in the Contract Documents and in the full amount of the Contract Sum plus sales tax. The cost of such bonds will be included in the Base Bid.

B. **Subcontractor Bonds.** The Owner reserves the right to require certain Subcontractors to furnish performance and labor and material payment bonds in form as set forth herein and as set forth under the Bidding Documents or Contract Documents. The Owner will not, however, be responsible for any costs for any Subcontractor bonds unless the Owner, prior to the execution of the Owner-Contractor Agreement, requires the Bidder, in writing, to furnish such bonds from designated Subcontractors. Should any bonds be furnished by subcontract bidders, or be required by any Bidder to be furnished by any subcontract bidder or Subcontractor, without the written request of the Owner prior to the execution of the Owner-Contractor Agreement, the costs for any such bonds will be at the expense of the Bidder and will not be added to the Contract Sum.

C. **Time of Delivery and Form of Bonds.** The Bidder will deliver the bonds and other documents required by the Contract Documents (including, but not limited to, certificates of insurance) to the Owner pursuant to the Contract Documents, and in no event any later than seven (7) days after the date of execution of the Contract and prior to commencing operations at the site. The bonds will be written in the form(s) approved by the Owner for public works, as required by Chapter 39.08 RCW. The bonds will be written by a surety firm licensed to do business in the State of Washington, with an A.M. Best rating of at least A/IX. The Bidder will require the Attorney-in-Fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his/her Power of Attorney.

1.08 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

A. **Form to be Used:** The Agreement for the Work will be written on the form(s) contained in the Bidding Documents.

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

1.09 CONTRACT DOCUMENTS

This paragraph contains descriptions of some, <u>but not all</u>, of the provisions of the Contract Documents.

A. **RETAINAGE.** The Contract Documents specify the statutory retainage requirements of Chapter 60.28 RCW for this Project.

B. **CONTRACT TIME.** The Contract Documents specify the Contract Time. Timely completion of this Project is essential to the Owner.

C. **PREVAILING WAGES.** The Contract Documents contain requirements regarding the payment of prevailing wages pursuant to Chapter 39.12 RCW.

D. **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. The Owner is under no obligation to consider Claims that fail, in any respect, to meet such requirements.

E. **CHANGES IN CONTRACT SUM.** The Contract Documents contain provisions specifying requirements for and pricing of changes in the Contract Sum.

F. **DISPUTE RESOLUTION.** The Contract Documents contain provisions replacing the arbitration provisions of the form General Conditions with an alternative dispute resolution procedure which, among other things, requires non-binding mediation of all disputes.

G. **CONTRACTOR REGISTRATION.** Pursuant to Chapter 39.06 RCW, the Bidder will be registered or licensed as required by the laws of the Washington State, including, but not limited to, Chapter 18.27 RCW.

H. **COMMISSIONING OF OPERATIONAL SYSTEMS.** Certain systems may be designated in the Contract Documents as "Operational Systems." If so, prior to the Date of Substantial Completion the Operational Systems must be up and running, ready for normal operation, and subject to a pre-commissioning inspection.

I. **TAXES.** The Contractor will include in its Bid and pay for all applicable taxes, except Washington State sales tax and local sales tax on the Contract Sum, which will be excluded in the preparation of its Bid. Such state and local sales taxes will be added to the Contract Sum, paid by the Owner to the Contractor, and then paid by the Contractor as specified in the Contract Documents. Refer to General, Supplementary, or other conditions regarding further information.

J. **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 Paragraph 1.09 as complete or inclusive.

1.10 POSSIBLE TRENCH EXCAVATION SAFETY PROVISIONS

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

1.11 APPRENTICESHIP UTILIZATION PLAN

These Instructions to Bidders require that, after Bids are received, those Bidders requested by Owner will submit a completed Apprenticeship Utilization Plan utilizing a form acceptable to Owner. Without limiting the foregoing, in accordance with RCW 39.04.350, if the successful 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 to the Owner an Apprenticeship Utilization Plan within ten (10) business days immediately following the Notice to Proceed date.

- END OF SECTION -

SECTION 00 31 00
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 EXISTING CONDITIONS

A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:

B. Site and Utility Survey: Entitled Longview Public Schools Stadium Field Conversion & Track, dated 2/28/2024.
   1. An electronic media copy is available upon request.
   2. This survey identifies grade elevations prepared primarily for establishing new grades and identifying natural water shed.

C. Existing Building Drawings:
   1. An electronic media copy is available upon request.
   2. Original construction drawings for existing structure.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

BID FORM

To be submitted no later than 2:00 p.m. on the bid submittal date indicated in Section 00 11 13.

TO: Longview School District No. 122
MOTF Office
2080 38th Avenue
Longview, Washington 98632

The undersigned Bidder acknowledges receipt of and familiarization with the Bidding Documents, the Project Manual, the Drawings, the Specifications, the Contract Documents, and the following Addenda:

Addendum No.:	Date	Pages	Initials of Bidder Representative
1			
2			
3			
4			

BASE BID:

Pursuant to and in compliance with the Contract Documents, including the Advertisement for Bids and Instructions to Bidders, the Bidder hereby certifies that it has carefully examined the Bidding Documents, the Contract Documents, and the conditions affecting the Work, and being familiar with the site, and having made the necessary examinations, proposes to furnish all labor, materials, equipment, and services necessary to complete the Work in strict accordance with the Contract Documents for the above-named Project for the following sum, which is hereby designated as the Base Bid:

_____ Dollars ($ _____).

(Show amount in words and figures. This amount does <u>not</u> include state/local sales tax.)

ALTERNATE BIDS:

See Section 01 23 00, Alternates, for full description.

No.:	Description of Alternate Bids	Type	Alternate Bid Amount (Words)	Alternate Bid Amount (Figures)
1.	Remove scope of work related to replacing sinks & counters from 2nd Level Restrooms.	Deduct		$
2.	Remove painting scope at interior walls and floors of Press Box.	Deduct		$

No.:	Description of Alternate Bids	Type	Alternate Bid Amount (Words)	Alternate Bid Amount (Figures)
3.	Remove exterior flags/banners and mounting bracket scope. See Section 10 83 00.	Deduct		$
4.	Remove exterior spot lighting fixtures on south exterior wall.	Deduct		$

REINSTATEMENT OF ALTERNATE BIDS:

The undersigned Bidder agrees that the Owner has the right, for a period of forty-five (45) days following the bid submittal deadline, to initiate or rescind acceptance of any Alternate Bid in the amount(s) quoted above.

SALES TAX:

None of the sums stated in the foregoing includes Washington State or local sales tax.

TIME OF COMPLETION AND LIQUIDATED DAMAGES:

The undersigned Bidder agrees, if awarded the Contract, to achieve Substantial Completion of the Work of the Contract within the period specified in AIA Document A101-2017, as modified by Owner, and also agrees to the amounts specified in the Contract Documents for Liquidated Damages. It is further agreed that the time for completion of the Work described herein is a reasonable time considering the average climatic range and usual industrial conditions prevailing in the locality.

TRENCH EXCAVATION SAFETY PROVISIONS:

If the Contract Documents contain any work that requires trenching exceeding a depth of four (4) feet, all costs for adequate trench safety systems must be identified as a separate bid item in compliance with Chapter 39.04 RCW and WAC 296-155-650. The purpose of this provision is to ensure that the Bidder agrees to comply with all the relevant trench safety requirements of Chapter 49.17 RCW. This bid amount will be considered as part of the Base Bid set forth above. Bidder must include a lump-sum dollar amount in the blank below (even if the value is $0.00) to be responsive.

Trench Excavation Safety Provisions Only: _____ Dollars ($_____).

CONTRACT AND BONDS:

If the Owner awards a contract based on this Bid within forty-five (45) days of the bid submittal deadline, the Bidder agrees to execute a contract for the above work, for compensation computed from the above-stated sums, on the form of contract provided in the Bidding Documents, and to furnish Payment and Performance Bonds and acceptable evidence of insurance as required by the Contract Documents.

BID GUARANTEE:

Pursuant to the Instruction to Bidders, Section 00 21 13, Bidder hereby certifies that it has furnished a bid guarantee for no less than five (5) percent of the Base Bid, and that such guarantee accompanies this Bid Form.

Within twenty-four (24) hours after the issuance of the Owner's notice of intent to award the Contract, the successful bidder must furnish evidence satisfactory to the Owner of its ability to obtain statutory bonds pursuant to Chapter 39.08 RCW. Additionally, the successful bidder must submit the Payment and Performance Bonds and other documents required by the Contract Documents (including, but not limited to, certificates of insurance) to the Owner no later than seven (7) days after the date of execution of the Contract. The successful bidder must also submit within forty-eight (48) hours of the Owner's request a complete Apprenticeship Utilization Plan and such other information as specified in Paragraph 1.06 ("Post-Bid Information") of the Instructions to Bidders, Section 00 21 13.

If the successful bidder, upon award of the Contract by the Owner, fails to execute the Contract or submit the Payment and Performance Bonds or other information required by the Instructions to Bidders as required within the time specified, the Owner may revoke the award. Should the successful bidder fail to enter into the Contract with Owner, the bid guarantee may be retained by Owner as liquidated damages, not as a penalty.

If a contract is not awarded within forty-five (45) days after the bid submittal deadline, or if the Bidder delivers an executed Contract, executed Payment and Performance Bonds, and such other information required by the Instructions to Bidders, Section 00 21 13, then the certified or bank cashier's check submitted as the bid guarantee will be returned to the bidder, or the Bid Bond will become void.

IDENTIFICATION OF SUBCONTRACTORS:

A. <u>Due Within One (1) Hour of the Bid Submittal Deadline</u>

List here the names of the Subcontractors with whom the Bidder, if awarded the Contract, will subcontract for performance of the Work of HVAC (heating, ventilation, and air conditioning), plumbing (as described in Chapter 18.106 RCW) and electrical (as described in Chapter 19.28 RCW), or indicate if Bidder will self-perform the Work. Bidder may only substitute a listed Subcontractor in accordance with RCW 39.30.060. Failure of the Bidder to submit as part of the Bid the names of such Subcontractors or to name itself to perform such Work, or the naming of two or more Subcontractors to perform the same Work, will render the Bid nonresponsive and, therefore, void.

Type of Work	**Subcontractor Name (Or Indicate Self-Performed)**	**Subcontractor Address**	**Subcontractor Phone**
HVAC (heating, ventilation, and air conditioning)			

Plumbing as described in Chapter 18.106 RCW			
Electrical as described in Chapter 19.28 RCW			

B. <u>Due Within Forty-Eight (48) Hours of the Bid Submittal Deadline</u>

RCW 39.30.060(1)(b) allows the Bidder to submit within forty-eight (48) hours of the published bid submittal deadline the names of the Subcontractors with whom the Bidder will subcontract for the performance of the Work of structural steel installation and rebar installation. Please indicate whether the Bidder intends to submit the names of Subcontractors for the structural steel installation and rebar installation along with the Base Bid or will submit within forty-eight (48) hours. Failure of the Bidder to submit the names of such Subcontractors or to name itself to perform such Work, or the naming of two or more Subcontractors to perform the same Work, will render the Bid nonresponsive and, therefore, void.

The Bidder has included Subcontractor names for structural steel installation and rebar installation on this form

☐ Yes ☐ No

The Bidder intends to submit Subcontractor names for structural steel installation and rebar installation within forty-eight (48) hours of the bid submittal deadline as indicated in Section 00 11 13.

☐ Yes ☐ No

<u>Failure of the Bidder to submit Subcontractor names within the above-stated timeframes will render the Bid nonresponsive and void.</u>

If Subcontractors vary with Alternate Bids, Bidder must indicate which Subcontractor will be used for which Alternate Bid.

Alternate No.:	**Subcontractor Name**	**Work to be Performed**
1		HVAC
		Plumbing
		Electrical
		Structural Steel Installation
		Rebar Installation

2		HVAC
		Plumbing
		Electrical
		Structural Steel Installation
		Rebar Installation
3		HVAC
		Plumbing
		Electrical
		Structural Steel Installation
		Rebar Installation
4		HVAC
		Plumbing
		Electrical
		Structural Steel Installation
		Rebar Installation

RESPONSIBILITY CRITERIA:

The undersigned hereby verifies under penalty of perjury, in accordance with RCW 9A.72.085, that Bidder is in compliance with the responsible bidder criteria requirements of RCW 39.04.350(1)(g).

BIDDER'S INFORMATION:

Bidder's Business Name:
Type of Business: ☐ Sole Proprietorship ☐ Partnership ☐ Corporation (State of Incorporation:___) ☐ Other
Physical Business Address (Must not be a P.O. Box):

City:	State:	Zip Code:
Business Telephone Number:	Business Fax Number:	Business Email Address:
State of Washington numbers for the following:		
Contractor Registration No.:	UBI No.:	Employment Security Dept. No.:

OFFICIAL AUTHORIZED TO SIGN FOR BIDDER:

"I certify (or declare) under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct":	
Signature:	Date:
Print Name and Title	Location or Place Executed: (City, State)

END OF SECTION

Project Name:_____

The undersigned attests, under penalty of perjury, that the bidder has no final and binding citation or notice of assessment from Labor & Industries for:

- Minimum wage requirements and labor standards (RCW 49.46)
- Wages – payment – collection (RCW 49.48)
- And, only for contracts awarded between Sept. 1, 2010, and Dec. 31, 2013, not been found in violation of requirements to submit of information to L & I about certain "off-site, prefabricated, nonstandard, project specific items" (RCW 39.04.370)

_____ _____

Authorized Signature Printed Name

_____

Title

_____

Date

Apprentice Utilization Plan

Date Submitted _____

Contract Number _____ Contract Title _____

Prime Contractor _____

Utilization based on planned values %

Contract Total Labor Hours

Contract Total Apprentice Hours

Apprenticeship Utilization Requirement _____ %

Anticipated Start Date	Contractor	Occupation (Trade)	Total labor hours (including apprentices)	Apprentice hours

Apprentice Utilization Plan

Anticipated Start Date	Contractor	Occupation (Trade)	Total labor hours	Apprentice hours
		Totals	0.00	0.00

Printed Name: ______________________________ Date: ____________

Signature: ______________________________

BIDDER QUALIFICATION STATEMENT

1. Introduction

Pursuant to Paragraph 1.06(A)(1) of the Instructions to Bidders, the Longview School District No. 122 is requesting the following information. Failure to provide any of the following information in a timely manner may result in forfeiture of the bid security. *Please attach additional pages where necessary.*

2. General Information

2.1. Name of Bidder: _____

2.2. Address of Bidder:_____

2.3. Telephone Number of Bidder: _____

3. Bidder's Forces, Use of Subcontractors, and Suppliers

3.1. What portions of the Work included in the proposed Contract will be performed by the Bidder's own forces?

3.2. What portions of the work included in the proposed Contract will be performed by Subcontractors?

3.3. Attach or list the names of the persons or entities (including a designation of the Work to be performed with the Bidder'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.

3.4. List the proprietary names and the suppliers of the principal items or systems of materials and equipment proposed for the Work.

4. Bid Breakdown

Attach an itemized breakdown of the Bid, including labor tasks, labor costs, materials, material costs, and delivery charges.

5. Work History

5.1. Attach or list the following information on similar projects that your organization has completed in the past three (3) years: name and type of project, owner (include name and telephone number of the contact person), contract amount, expected date of completion, and date of completion.

5.2. Describe your organization's experience with remodeling of and/or additions to K-12 school facilities, and particularly athletic facilities.

5.3. Attach or list the following information on all projects that your organization now has in progress: name and type of project, owner, architect/engineer (include name and telephone number of contact person), contract amount, and scheduled date of completion.

5.4. Has your organization ever defaulted on or otherwise failed to complete any work under contract? If so, describe each such circumstance:

5.5. Has any officer, partner, or principal of your organization ever been an officer, partner, or principal of another organization that defaulted on or otherwise failed to complete any work under contract? If so, describe each such circumstance:

5.6. Provide the construction experience (length, project type, scope, complexity) of the Project Manager and Superintendent that would be assigned to perform the Work under this proposed contract.

6. Additional Letters and Forms

6.1. Attach a letter or form from the Bidder's insurance company stating that the insurance required by the Bidding Documents will become effective upon execution of the proposed Contract.

6.2. Attach a letter or form from the Bidder's surety stating that the Payment Bond and the Performance Bond will become effective upon execution of the proposed Contract.

6.3. [If applicable, see Owner for questions:] Attach a completed copy of page 2 of the Office of Superintendent of Public Instruction (OSPI) Form D-9. The applicable form may be found at: Form D-9 (www.k12.wa.us).

END OF SECTION

DRAFT

AIA® Document A101™ – 2017

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a Stipulated Sum

AGREEMENT made as of the «» day of « » in the year «»
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

«**Longview School District No. 122**»« »
«2715 Lilac Street»
«Longview Washington 98632»
«(360) 575-7019»

and the Contractor:
(Name, legal status, address and other information)

« »« »
« »
« »
« »

for the following Project:
(Name, location and detailed description)

«**Memorial Stadium Upgrades**»
Memorial Stadium
2853 Hudson Street
Longview, Washington 98632»
«Exterior renovation of stadium, including new roof, entry gate, and ticket booth, as well as interior renovation of locker rooms, as further described in Bidding Documents.»

The Architect:
(Name, legal status, address and other information)

«**LSW Architects, P.C.**»
«610 Esther Street, Suite 200»
«Vancouver, Washington 98660»
«(360) 694-8571»
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101™–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS

2 THE WORK OF THIS CONTRACT

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4 CONTRACT SUM

5 PAYMENTS

6 DISPUTE RESOLUTION

7 TERMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS

~~**EXHIBIT A INSURANCE AND BONDS**~~

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, revised Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the entire Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

~~[« »] The date of this Agreement.~~

[**«X»**] A date set forth in a notice to proceed issued by the Owner.

~~[« »] Established as follows:~~
~~*(Insert a date or a means to determine the date of commencement of the Work.)*~~

~~« »~~

~~If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.~~

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

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[« »] ~~Not later than « » (« ») calendar days from the date of commencement of the Work.~~

[« X »] By the following date: August 15, 2025.

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
N/A	

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « », plus Washington State and local sales tax on the Contract Sum, subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
N/A	

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
As allowed under the Bidding Documents or Contract Documents.		

§ 4.3 Allowances, if any, included in the Contract Sum. These descriptions are summary in nature, and the scope of this Work is further described elsewhere in the Contract Documents:
(Identify each allowance.)

Item	Price
N/A	

§ 4.4 Unit prices, if any, are as follows. These descriptions are summary in nature, and the scope of this Work is further described elsewhere in the Contract Documents:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)
N/A		

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

«**§ 4.5.1** Contractor will pay to Owner liquidated damages of $750 per day that the Work is delayed beyond the date stated for Substantial Completion in the Contract Documents. The liquidated damage amounts set forth herein will be assessed not as a penalty, but as liquidated damages for breach of the Contract Documents. This amount is fixed and agreed upon by and between the Contractor and Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would sustain in such event. This amount will be construed as the actual amount of damages sustained by the Owner, and may be retained by the Owner and deducted from periodic payments to the Contractor.

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§ 4.5.2 Assessment of liquidated damages will not release Contractor from any further obligations or liabilities pursuant to the Contract Documents. This Section 4.5 does not limit the remedies available to the Owner under this Agreement or by law.

§ 4.5.3 The period for calculating liquidated damages will end when Substantial Completion of the Work is achieved. However, if Final Completion of the Work is also delayed beyond the time allowed per the Contract Documents, actual damages will be assessed, as provided in Section 4.6.1. »

§ 4.6 Other:
~~(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)~~

«**§ 4.6.1 Actual Damages.** Actual damages will be assessed for failure to achieve Final Completion within the time provided. Actual damages will be calculated on the basis of direct architectural, administrative, and other related costs and expenses of any nature whatsoever attributable to the Project, or a portion thereof, from the date when Final Completion should have been achieved, based on the date Substantial Completion is actually achieved to the date Final Completion is actually achieved. Owner may offset these costs against any payment due Contractor. This provision does not limit Owner's remedies available under the Contract Documents or by law.

§ 4.6.2 Statutory Incentives and Penalties. Monetary incentives and penalties for meeting or failing to meet Washington State apprenticeship utilization goals, in accordance with RCW 39.04.320(4)(b)—if any—shall be as described in the General Conditions.»

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor pursuant to Section 9.3 of the AIA Document A201-2017 as revised, and Certificates for Payment issued by the Architect pursuant to Section 9.4 of the AIA Document A201-2017 as revised, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, consistent with the AIA Document A201-2017 as revised.~~, or as follows:~~

~~« »~~

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the «last working» day of a month and the Contractor has satisfied those other conditions specified in Section 9.3 of the AIA Document A201-2017 as revised, the Owner shall make payment of the amount certified to the Contractor as specified in Section 9.6 of the AIA Document A201-2017 as revised~~not later than the « » day of the « » month~~. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner as otherwise provided by the Contract Documents.~~not later than « » (« ») days after the Architect receives the Application for Payment.~~
~~(Federal, state or local laws may require payment within a certain period of time.)~~

§ 5.1.4 Pursuant to Section 9.2 of the AIA Document A201-2017 as revised, each Application ~~Each Application~~ for Payment shall be based on the most recent approved schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and as specified in the Contract Documents. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect or Owner may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the Project site for subsequent incorporation in the completed construction, or, if approved in writing and in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, and the Owner agrees, is due and payable under Section 7.3 of the AIA Document A201-2017 as revised ~~the Architect determines, in the Architect's professional judgment, to be reasonably justified~~.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Owner or Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect or Owner may withhold payment, or for which the Owner or Architect may nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7 herein.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

«Five percent (5%) of each approved Application for Payment shall be retained, unless the Contractor submits, and the Owner accepts, a retainage bond pursuant to RCW 60.28.011(6) and in accordance with Section 9.3.4 of the AIA Document A201-2017 as revised.»

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

«**[Not used]** »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

«Reduction or limitation of retainage, if any, shall be as provided in Washington statute and the Contract Documents.»

§ 5.1.7.3 ~~Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:~~ The Contractor may make a request for payment of retainage following Final Completion, and the Owner will release retainage, in accordance with Section 9.10.6 of the AIA Document A201-2017 as revised. ~~*(Insert any other conditions for release of retainage upon Substantial Completion.)*~~

~~« »~~

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

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§ 5.1.9 Except with the Owner's prior written approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the Project site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, except for retainage, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; ~~and~~

.2 a final Certificate for Payment has been issued by the Architect; and

.3 Final Acceptance by the Owner's Board of Directors has occurred.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

«Sixty (60) days after Final Acceptance, as defined in Section 9.10.2 of the AIA Document A201-2017 as revised.»

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

«As specified in Chapter 39.76 RCW. » ~~% « »~~

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

~~The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.~~
~~*(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)*~~ **[Not used]**

~~« »~~
~~« »~~
~~« »~~
~~« »~~

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

[**« »**] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[**« »**] Litigation in a court of competent jurisdiction

[**«X»**] Other *(Specify)*

«Litigation in Superior Court for the County of Cowlitz, Washington.»

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction in Cowlitz County, Washington.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

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§ 7.1.1 ~~If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:~~
~~*(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)*~~ **[Not used]**

~~« »~~

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's designated representative:
(Name, address, email address, and other information)

«Rick Parrish
Executive Director of Communications & Operations
Longview School District»
«2715 Lilac Street»
«Longview, Washington 98632»
«rparrish@longview.k12.wa.us»

§ 8.3 The Contractor's designated representative:
(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A201-2017 as revised~~A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds,~~ and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A201-2017 as revised~~A101™–2017 Exhibit A,~~ and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format~~, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise~~ may be given as set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

«As stated in Section 1.6 of the AIA Document A201-2017 as revised and elsewhere in the Contract Documents.»

§ 8.7 Other provisions:

«**§ 8.7.1 Public Records Act Compliance.** Contractor understands that the Owner is bound by the Washington Public Records Act, Chapter 42.56 RCW. Contractor agrees to fully cooperate with the Owner in responding to public

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records requests. The Contractor shall promptly provide such records to the Owner as requested by the Owner or required by law for the Owner to fulfill its obligations in responding to public records requests. Such records shall be provided at no cost to the Owner. Contractor shall cause any subcontract to contain this provision. This section shall survive expiration or termination of this Agreement for any reason.

§ 8.7.2 Substitution of Personnel. Contractor and the Owner have no present intention to substitute personnel, and the parties shall endeavor to minimize substitutions and maintain continuity of personnel, but each reserves the right to substitute its personnel for the purpose of carrying out its responsibilities under this Contract. Such substitution by the Contractor shall be subject to the approval of the Owner, which approval shall not be unreasonably withheld. If the Contractor substitutes personnel, it shall not charge the Owner for any extra costs incurred thereby, including, without limitation, costs incurred to familiarize new personnel with the Project. If requested by the Owner, the Contractor shall remove from performing the Work, without cost to the Owner or delay to the Work, any person whose removal the Owner reasonably requests. Nothing in this provision shall be construed to alter the independent contractor status of the Contractor.

§ 8.7.3 Prohibited Interest. Contractor shall ensure that its officers, employees, and agents, and those of its Subcontractors, comply with the Code of Ethics for Municipal Officers, Chapter 42.23 RCW, which, among other things, prohibits municipal officers from being beneficially interested, directly or indirectly, in any contract which may be made by, through, or under the supervision of such officer, in whole or in part. Contractor shall remove, at its sole cost and expense, any of its or its Subcontractors' employees or agents if they are in violation of this provision. No director, officer, or employee of the Owner shall have any interest, directly or indirectly, in this Contract or the proceeds thereof prohibited by Chapter 42.23 RCW.

§ 8.7.4 Severability. If, for any reason, any part, term or provision of this Agreement is held by a court of competent jurisdiction to be illegal, void, or unenforceable, the validity of the remaining provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular provision held to be invalid; provided, however, that if it should appear that any provision of the Contract Documents is in conflict with any statutory provision of the State of Washington, the provision shall be deemed modified to conform to such statutory provision.»

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor (as revised by Owner). All references to the A101 or to the Agreement are to the document as revised by the Owner.

.2 ~~AIA Document A101™–2017, Exhibit A, Insurance and Bonds~~ **[Not used]**

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction (as revised by Owner). All references to the A201 or to the General Conditions are to the document as revised by the Owner.

.4 ~~AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:~~ **[Not used]**
~~*(Insert the date of the E203-2013 incorporated into this Agreement.)*~~

~~« »~~

.5 Drawings

Number	Title	Date
See the Index of Drawings in the Project Manual.		

.6 Specifications

Section	Title	Date	Pages
See the Table of Contents in the Project Manual.			

.7 Addenda, if any:

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Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

~~[« »] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:~~
~~*(Insert the date of the E204-2017 incorporated into this Agreement.)*~~

~~« »~~

~~[« »] The Sustainability Plan:~~

~~Title~~	~~Date~~	~~Pages~~

[**« X »**] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
See the Project Manual.			

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

«See the General Conditions and Special Conditions.»

This Agreement entered into as of the day and year first written above.

Longview School District No. 122

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
Patti Bowen, Exec. Director of Business Services	« » « »
(Printed name and title)	*(Printed name and title)*

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BID BOND

KNOW ALL PERSONS BY THESE PRESENTS: That we, _____

_____ (herein "Principal"),

as Principal, and _____ (herein "Surety"),

as Surety, are held firmly bound unto Longview School District No. 122, Cowlitz County, Washington, in the full sum of _____ Dollars ($_____) lawful money of the United States of America for the payment of which sum of money, well and truly to be made, said Principal and Surety bind themselves and each and every of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the above-named Principal has submitted a bid for the **Memorial Stadium Upgrades Project** in accordance with the Advertisement for Bids and Instructions to Bidders prepared by Longview School District No. 122 and is desirous of accompanying said bid with a bid bond in the penalty of five (5) percent of said bid in lieu of certified or bank cashier's check.

NOW THEREFORE, if said Principal, upon receipt of written notice of the acceptance of such bid, shall within forty-five (45) days after the Bid Date enter into a written contract with Longview School District No. 122 upon the form of contract included in the Bidding Documents for the completion of such contract in accordance with the terms and conditions of said bid, provide payment and performance bonds with good and sufficient sureties for the faithful and proper fulfillment of such contract, and provide all insurances as required by the contract, then this obligation will be null and void; otherwise to remain in full force and effect.

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

Principal:	**Surety:**
_____	_____
_____ Signature of Representative	_____ Signature of Representative
_____ Printed Name	_____ Printed Name
_____ Title	_____ Title
_____ Address	_____ Address
_____ Telephone No.	_____ Telephone No.
_____ Witness	_____ Witness

END OF SECTION

DRAFT

AIA® Document A201™ – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

«**Memorial Stadium Upgrades**»
«Memorial Stadium
2853 Hudson Street
Longview, Washington 98632»

THE OWNER:
(Name, legal status and address)

«**Longview School District No. 122**»
«2715 Lilac Street»
«Longview Washington 98632»

THE ARCHITECT:
(Name, legal status and address)

«**LSW Architects, P.C.**»
«610 Esther Street, Suite 200»
«Vancouver, Washington 98660»
« »

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ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Owner or Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements. Should there be a conflict or discrepancy among or in the Contract Documents that cannot be resolved by interpreting the Contract Documents as a single, integrated document and giving effect to each provision therein, interpretation shall be determined in the following priority, with an Addendum or a revision to a Contract Document having precedence over the original document and later Addenda having precedence over earlier:

.1 Agreement (revised AIA Document A101-2017) (written amendments having precedence);
.2 Any Special Conditions;
.3 Any Supplementary Conditions;
.4 These revised General Conditions (revised AIA Document A201-2017);
.5 Specifications;
.6 Material and systems schedules;
.7 Drawings (large-scale having precedence over small-scale, and written or computed dimensions having precedence over scaled dimensions).

In the event that Work is shown on Drawings but not contained in Specifications, the Work as shown shall be provided at no change in the Contract Sum or Contract Time, according to specifications to be issued by the Architect that are consistent with and reasonably inferable from the Work shown on the Drawings.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, although the Owner does not waive any third-party beneficiary rights or rights to assignment it may otherwise have as to Subcontractors of any tier, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

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

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

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§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, the Project Manual, and other similar materials describing the Work to be executed by the Contractor.

§ 1.1.8 Initial Decision Maker

~~The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.~~ [Not used.]

§ 1.1.9 Project Manual

The Project Manual is a volume or volumes assembled for the Project which may include the bidding requirements, sample forms, Conditions of the Contract, Specifications, and other related materials such as construction details and schedules.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 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 Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections, and articles, and arrangement of Drawings, shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Such organization also shall not obviate the Contractor's duty to complete all of the Work when coordination between the Specifications and the Drawings or coordination between Subcontractors is required.

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

§ 1.2.4 If the Contractor discovers that the Specifications, Drawings, or Project Manual fail to specify the material or kind of goods to be used in any location; discovers an inconsistency or ambiguity between the Specifications, Drawings, or Project Manual; or an inconsistency or ambiguity arises internally within the Specifications, Drawings, or Project Manual, the Contractor shall inquire of the Architect as to what is intended and best suited. The material that a competent contractor would use in its place to produce first-quality finished Work shall be considered a part of the Contract without adjustment to the Contract Sum or Contract Time. If the Contractor discovers such an inconsistency or ambiguity and fails to notify the Architect, there shall be no adjustment to the Contract Sum or Contract Time.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles and sections herein, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement. Reference in the singular to an article, device, item, or piece of equipment shall include the larger of the number of such articles indicated in the Contract Documents or the number required to complete the installation. Specification and Drawing notes may include

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incomplete sentences where words such as "shall," "shall be," "the Contractor shall," and similar phrases shall be supplied by inference. The term(s) "approved," "or approved," and "as approved" mean approved by the Architect, and by any governing codes and officials, and by any quality standards specified as applicable to the work in question. The term "as directed" means as directed by the Architect or the Owner's Authorized Representative. The term "provide" means to furnish and install. The term "as required" or "as necessary" means as required by applicable codes or standards, and/or as may be required for proper completion of the Work. The terms "shall" and "will" are used interchangeably throughout the Contract Documents to mean "is required to."

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall, subject to the rights of the Owner, be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and subject to the rights of the Owner shall retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by email~~electronic transmission if a method for electronic transmission is set forth in the Agreement~~. Electronic transmission by email shall be made to such address(es) specified by each party in writing upon execution of this Agreement. Email transmission shall be deemed completed on a given day if sent prior to 5 p.m. Pacific Time. Emails sent after 5 p.m. shall be deemed sent on the next calendar day.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, ~~or~~ by courier providing proof of delivery, or by email.

§ 1.7 Digital Data Use and Transmission

~~The parties shall agree upon protocols governing the transmission and use of Instruments of Service~~ The Contractor acknowledges that Drawings, Specifications, Instruments of Service, or any other information or documentation ~~in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.~~ that the Contractor receives in digital form, other than PDF files, may contain transmission or translation errors and are issued for convenience only, and thus the Contractor may rely upon only hard copy documents and PDF files. Any electronic files other than PDF files will be provided for the convenience of the Contractor. Neither the Architect nor the Owner shall be liable for any inaccuracy or incompleteness in information contained in an electronic copy (other than PDF files) of an Instrument of Service. Electronic files other than PDF files are not Contract Documents and cannot be relied upon as identical to the Contract Documents. Use of information contained in electronic files (other than PDF files) is at the Contractor's risk and without liability to the Architect or the Owner. The Contractor is required to execute the Architect's electronic document release to obtain the Instruments of Service in an electronic format other than PDF.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in ~~AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form,~~ an agreement required by the Owner or Architect shall be at the using or relying party's sole risk and without liability to the other party and its

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contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the ~~Owner or the Owner's authorized representative.~~ Longview School District No. 122 ("District"), which is represented by the District's Board of Directors or its authorized representative. The "Owner" does not include District administrators, employees, consultants, or volunteers. Waivers of provisions of the Contract can only be made in writing by the District's Board of Directors. No other person is authorized to grant such waivers on behalf of the Owner. No officer, employee, agent, or representative of the Owner shall be personally responsible for any liability arising under this Contract.

§ 2.1.2 ~~The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.~~ [Not used.]

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 ~~Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.~~ [Not used.]

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor of undisputed amounts as the Contract Documents require; or (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due and the Owner agrees.~~; or (3) a change in the Work materially changes the Contract Sum.~~ If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. ~~However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided.~~ If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay, and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments, and charges required for construction, use, or occupancy of permanent structures or for permanent

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changes in existing facilities. The Contractor is responsible to secure and pay for licenses and all other permits, subject to Section 3.7.1.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor ~~to whom the Contractor has no reasonable objection and~~ whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner ~~shall~~ may furnish surveys describing physical characteristics, legal limitations, and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work. The Contractor should assume that the locations of any underground or hidden utilities, active or abandoned underground tanks, plumbing, or electrical runs indicated in the surveys or Contract Documents are shown in approximate locations. The Contractor is responsible for performing all utilities investigation and location work to determine the precise locations thereof. The Contractor shall not damage or interrupt utilities or utilities services of any kind. The Contractor shall bear the risk of loss arising out of its Work that directly or indirectly damages or interrupts any utilities or utilities services, or causes or contributes to damages of any nature, except in the case where the loss resulted because the utility location information provided by Owner or Utility Provider was significantly inaccurate.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents upon written request and with reasonable promptness. The Owner shall also furnish any other reasonable information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2. Electronic files may be available from the Architect, subject to the Architect's terms.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly or materially fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of itself, the Contractor, or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. In the event such deficiencies threaten the health or safety of the Owner's employees, students, or occupants, or exist within fourteen (14) calendar days of the date on which the Owner is scheduled to begin to operate school or school-related activities at the Project, the Owner may immediately proceed to correct such deficiencies without notice and without the 10-day cure period. Such action by the Owner and amounts charged to the Contractor ~~are both subject to prior approval of the Architect and the Architect may,~~ shall entitle the Owner and the Architect to, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. The right of the Owner to correct the Work pursuant to this Section 2.5 shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of itself or others. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15. The Owner's exercise of its rights under this Section shall not adversely affect any warranties applicable to the Project.

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ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, ~~if required~~ bonded, and insured in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved or accepted pursuant to Section 3.12. The Contractor shall comply with any requirements of the Office of the Superintendent of Public Instruction ("OSPI") and requirements related to the Washington Sustainable Schools Protocol ("WSSP"), to the extent applicable to the Project.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections, or approvals required or performed by persons or entities other than the Contractor.

§ 3.1.4 The Contractor shall be and operate as an independent contractor in the performance of the Work and shall have complete control over and responsibility for all personnel performing the Work. The Contractor is not authorized to enter into any agreements or undertakings for or on behalf of the Owner or to act as or be an agent or employee of the Owner.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. By executing this Contract, the Contractor agrees that the Contract Sum is reasonable compensation for all the Work, that the Contract Time is adequate for the performance of the Work, and that Contractor has carefully examined the Contract Documents, the Project site (including any existing structures and access thereto), and any drawings of the existing conditions available from the Owner, and that it has satisfied itself as to the nature, location, character, quality, and quantity of the Work, labor, materials, equipment, goods, products, supplies, services, and other items to be furnished and all other requirements of the Contract Documents. Contractor further agrees that it has satisfied itself regarding the surface conditions and other foreseeable 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, local regulations, disposal, handling and storage of materials, equipment and other items; availability and quality of labor, water, electric power, utilities, and drainage; availability and condition of roads; normal 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 Contractor to fully acquaint itself with any such condition or matter shall not in any way relieve the Contractor from the responsibility for performing the Work in accordance with the Contract Documents and within the Contract Sum and Contract Time and shall not be the basis of a Claim.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Drawings, Specifications, and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4~~,~~; shall take field measurements of and verify any existing conditions related to that portion of the Work, including all general reference points and any interfering existing conditions; shall observe any conditions at the site affecting it; and shall carefully compare and verify such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing such activities. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Owner and Architect any errors, inconsistencies, or omissions discovered by or made known to the Contractor as a request for information in such form as the Owner or Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor

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shall promptly report to the Owner and Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Owner or Architect may require. The Contractor shall comply with all applicable federal, state, county, and city laws, ordinances, rules, and regulations, including, but not limited to, the latest applicable versions of:

.1 International Building Code (with Washington State amendments);
.2 Uniform Plumbing Code;
.3 Uniform Mechanical Code;
.4 International Fire Code;
.5 National Electrical Code;
.6 Washington State Energy Code;
.7 Washington State Rules and Regulations for Barrier-Free Design;
.8 Americans with Disabilities Act ("ADA");
.9 Federal and state safety codes as adapted and/or modified by state and local ordinances;
.10 Washington Sustainable Schools Protocol ("WSSP"), to the extent that this Project receives any State of Washington funds or as otherwise required by the Contract Documents; and
.11 Any applicable municipal code.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of any design errors or omissions or inconsistencies noted by the Contractor, or clarifications or instructions the Owner or Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies, or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities unless the Contractor recognized or reasonably should have recognized such error, inconsistency, omission, or difference and failed to report it to the Owner and the Architect. If the Contractor performs any construction activity it knows or reasonably should have known involves an error, inconsistency, or omission in the Contract Documents or reports referenced therein without such notice to the Owner and the Architect, the Contractor shall be responsible for such performance and shall bear the attributable costs for correction.

§ 3.2.5 The Contractor will participate in recommending necessary investigations of hidden or subsurface conditions. The results of these investigations will be available for the convenience of the Contractor and its Subcontractors of any tier but are not a part of the Contract Documents unless specifically so indicated. While the Contractor may reasonably rely upon such investigation results, there is no guarantee, express or implied, that the conditions indicated are representative of those existing throughout the site or that unforeseen developments may not occur. The Contractor is solely responsible for reasonably interpreting the information and extrapolating beyond the testing location, including each individual boring, test pit, or other location.

§ 3.2.6 The Contractor shall do no Work, except Work related to means and methods and temporary controls, without applicable Drawings, Specifications, or written modifications or, where required, Shop Drawings, Product Data, or Samples, unless instructed to do so in writing by the Owner.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, assembly details, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, assembly details, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and ~~shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative~~ advise the Owner and Architect if (1) the specified instruction deviates from what the Contractor considers to be good construction practice or jeopardizes jobsite safety, (2) following the instruction will negatively affect any warranties, or (3) the Contractor objects to the instruction. The Contractor shall propose alternative instructions acceptable to the Contractor, for which no increase in the Contract Sum or Contract Time will be made. The Contractor shall not proceed with such alternative

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instruction without the written acceptance of the Owner and the Architect, and the Contractor shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative ~~solely~~ for conformance with the design intent for the completed construction. ~~Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.~~

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's principals, agents, employees, Subcontractors of any tier and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors of any tier.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work. Under no condition shall a section of Work proceed prior to preparatory Work having been completed, cured, dried, and otherwise made satisfactory to receive the related Work. Responsibility for timely installation of all materials and equipment rests solely with the Contractor, who shall maintain coordination control at all times. The Contractor shall require its Subcontractors of any tier to be familiar with all aspects of the Contract Documents related to their Work. The Contractor shall ensure that the responsible Subcontractor has carefully examined all preparatory Work that has been executed to receive its Work and has notified the Contractor (who shall notify the Owner and Architect in writing) of any defects or imperfections in preparatory Work that will, in any way, affect satisfactory completion of the Work. The lack of such notification or the failure of the Contractor to inspect such portions of the Work shall constitute an acceptance of preparatory Work and a waiver of any later claim of defect therein.

§ 3.3.4 The Contractor shall perform such detailed examination, inspection, and quality control and surveillance of the Work as will ensure that the Work is progressing and is being completed in strict accordance with the Contract Documents, including the then-current issue of the Drawings, Specifications, and accepted shop drawings. The Contractor shall be responsible for examination, inspection, and quality control and surveillance of all Work performed by any Subcontractor of any tier. The Contractor shall determine when it is necessary to perform, and shall perform, tests (in addition to those requested by the Owner or required by the Specifications or any other provision of the Contract Documents) to verify its inspections or to ensure that the Work is being completed in strict accordance with the Contract Documents. The Contractor shall report known errors, omissions, or inconsistencies to the Architect and the Owner before commencing Work. Inspections by or on behalf of the Owner shall not constitute approval of the Work.

§ 3.3.5 The Contractor shall plan and lay out all Work in advance of installation so as to coordinate all Work without delay or revision. The Contractor is responsible for coordination of all the Drawings related to specific locations. The Contractor shall establish and maintain existing lot lines, restrictions, existing survey markers of any kind, and benchmarks. The Contractor shall establish and maintain all other lines, levels, and benchmarks necessary for the execution of the Work and take necessary steps to prevent their dislocation or destruction. The Contractor shall employ a professional land surveyor registered in the State of Washington to initially lay out and be responsible for the accuracy of the Work and to create and submit to the Owner an as-built survey and accurate utility as-builts for use by the Owner. The Contractor shall provide an as-built surveyed site plan noting all site improvements, including, but not limited to, building corners, storm, sewer, drains, grade and invert elevations, edge of pavement, signs, markings, back of curb, and sidewalks.

§ 3.3.6 The Contractor's superintendent shall provide a Daily Report to the Owner for each workday during the Contract Time, whether or not any Work is performed, and for each non-workday in which Work is performed on the site. The Daily Report shall be completed on a form approved by the Owner and Architect and submitted to the Owner and the Architect on the workday following the day covered in the Report. Failure to provide timely Daily Reports to the Owner will entitle the Owner to withhold a portion of or the entire progress payment otherwise due to the Contractor.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. The Contractor shall install temporary meters to quantify the Contractor's required reimbursement to the Owner for the Contractor's use of utilities.

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§ 3.4.2 ~~Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the~~ After the Contract has been executed, the Owner 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 as described in the Specifications and following the procedures of the Contract Documents. The written request must include the specifications for the material or product and any proposed change in the Contract Sum or Contract Time. The Contractor may make substitutions only with the written consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive. By requesting a substitution, the Contractor 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 (or if not equal or better in all respects, the Contractor shall identify such deficiencies), 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 Contractor waives any other known or unknown Claim for an increase in the Contract Sum or Contract Time related to the substitution, that the Contractor has coordinated with affected Subcontractors, that the substitution will not impact other parts of the Work, and that the Contractor will coordinate the installation of the substitute if accepted and make all associated changes in the Work. Neither the Owner nor the Architect will be responsible for the performance of the substituted product.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work, including observance of badging, drug testing, and all smoking, tobacco, drug, alcohol, parking, safety, weapons, background checks, sexual harassment, and other rules governing the conduct of personnel at the Owner's property and at the Project site. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. No employees of either the Contractor or any of its Subcontractors of any tier shall harass, intimidate, have physical contact with, or engage in other verbal or physical conduct or communication of a sexual, intimidating, or harassing nature with students or the Owner's directors, officers, or employees, nor create an intimidating, hostile, or offensive environment. Without limiting the foregoing, the Contractor shall remove from the Work and Project site any employee, agent, or other person who has violated the District's policy and/or procedures or otherwise engaged in actions that the Owner reasonably considers objectionable without change in the Contract Sum or Contract Time. The Contractor shall also ensure by appropriate provisions in each subcontract agreement that the Contractor may remove from the Work and Work site any Subcontractor or Subcontractor's employee who has violated District policies/procedures or engaged in such action without change in the Contract Sum or Contract Time. Failure to comply with these requirements is grounds for immediate termination of the Contract for cause.

§ 3.4.3.1 All employees of Contractor and Subcontractors of any tier who may have unsupervised access to students shall undergo a record check through the Washington State Patrol criminal investigation system under RCW 43.43.830-.834, RCW 10.97.030, and RCW 10.97.050, and through the Federal Bureau of Investigation, before working at the Project site. The record check will include a fingerprint check using a complete Washington State criminal identification fingerprint card. The Contractor will provide the results of the record check to the subject of the records and to the Owner. The Contractor will pay all costs of the requirements set forth in this provision. When necessary, applicants may be employed on a conditional basis pending completion of the background check. In addition, any agreements between Contractor and Subcontractors of any tier who will perform services for the Owner will include this provision requiring the Subcontractor to comply with RCW 28A.400.303.

§ 3.4.3.2 Contractor will prohibit any employee of the Contractor from working at the Project site who has pleaded guilty to or been convicted of any crime enumerated in RCW 28A.400.322, as now or hereafter amended. Any failure to comply with this Section 3.4.3.2 will be grounds for the Owner to immediately terminate the Contract. In addition, any agreements between Contractor and Subcontractors of any tier who will perform services for the Owner will include this provision requiring the Subcontractor to prohibit any employee of said Subcontractor from working at a public school or the Project site who has pleaded guilty to or been convicted of any crime enumerated in RCW 28A.400.322.

§ 3.4.3.3 The Contractor shall develop and administer a system for maintaining site security and tracking all individuals with access to the Project site. All contractors, suppliers, and visitors who come onto school property shall be required to display an identification badge or sticker on their person (such as a hard hat sticker), which shall be provided by the Contractor. The Contractor shall coordinate the distribution of badges or stickers, shall maintain a list of all contractors, suppliers, and visitors with permission to be on school property (including identifying any personnel required to have a background check pursuant to Section 3.4.3.1), and shall make such list available to the Owner or Architect upon request. All badges or stickers shall include a personal identifier (such as a numerical

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designation), correlated with the Contractor's list of approved personnel and visitors, to allow the Owner or Architect to identify the contractor, supplier, or visitor.

§ 3.4.4 Nondiscrimination

§ 3.4.4.1 Contractor will comply with all applicable federal, state, and local laws, regulations, and ordinances prohibiting discrimination in the performance of this Contract, including without limitation, the Washington Law Against Discrimination, Chapter 49.60 RCW; Chapter 28A.640 RCW; Chapter 28A.642 RCW; Chapter 392-190 WAC; Title VII of the Civil Rights Act of 1964; the Vietnam Era Veterans Readjustment Act of 1974: Sections 503 and 504 of the Vocational Rehabilitation Act of 1973; the Equal Employment Act of 1972; the Age Discrimination Act of 1967; the Americans with Disabilities Act of 1990; and the Civil Rights Act of 1991. These laws and regulations establish minimum requirements for affirmative action and fair employment practices that Contractor must meet.

§ 3.4.4.2 Contractor will not discriminate against any employee or applicant for employment on the basis of sex, race, creed, religion, color, national origin, age, veteran or military status, sexual orientation, gender expression or identity, disability, or the use of a trained dog guide or service animal nor commit any other unfair practice(s) as defined in Chapter 49.60 RCW.

§ 3.4.4.3 In all solicitations or advertisements for employees placed by or for it, Contractor will state that all qualified applicants will be considered for employment, without regard to sex, race, creed, religion, color, national origin, age, veteran or military status, sexual orientation, gender expression or identity, disability, or the use of a trained dog guide or service animal.

§ 3.4.4.4 Contractor will send to each labor union, employment agency, or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice advising the labor union, employment agency, or workers' representative of Contractor's obligations according to the Contract Documents and Chapter 49.60 RCW.

§ 3.4.4.5 The Contractor will not discriminate against any recipient of any services or benefits provided for in this Contract on the grounds of sex, race, creed, religion, color, national origin, age, veteran or military status, sexual orientation, gender expression or identity, disability, or the use of a trained dog guide or service animal.

§ 3.4.4.6 Contractor will permit access to its books, records, and accounts, and to its premises by Owner and the Washington State Human Rights Commission for the purpose of investigation to ascertain compliance with this Section 3.4.4.

§ 3.4.4.7 Contractor will include the provisions of this Section 3.4.4 in every Subcontract and ensure that Subcontractors take such actions as may be required to ensure full compliance with the provisions of this section.

§ 3.4.5 Prevailing Wages

§ 3.4.5.1 Contractor will pay all laborers, workers, or mechanics performing Work under this Contract prevailing wages as required by Chapter 39.12 RCW and the rules and regulations of the Department of Labor and Industries ("Department") and will satisfy all other requirements of that chapter and the Department's regulations (collectively, the "Prevailing Wage Law"), including, but not limited to, requiring that all Subcontractors performing Work related to the Project comply with the Prevailing Wage Law. It is the Contractor's responsibility to ensure that the correct prevailing wage rates are paid. The Contractor shall provide the respective Subcontractors with a schedule of the applicable prevailing wage rates.

§ 3.4.5.2 The hourly minimum rates of wage which may be paid to laborers, workers, or mechanics for work related to the Project are determined by the Industrial Statistician of the Department and are shown on the Department's website at the following locations (using the bid due date for this Project):

Journey: https://secure.lni.wa.gov/wagelookup/rates/journey-level-rates
Apprentice: https://secure.lni.wa.gov/wagelookup/rates/apprentice-rates

A copy of the applicable wage rates is also available for viewing in the Owner's offices. It is the Contractor's responsibility to verify the applicable prevailing wage rate.

§ 3.4.5.3 Before commencing the Work and prior to the Owner making any payment to the Contractor under this Contract, Contractor and each Subcontractor will submit to the Owner a Statement of Intent to Pay Prevailing

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Wages approved by the Industrial Statistician of the Department, complying with the requirements of RCW 39.12.040, and certifying the rate of hourly wage paid and to be paid to each classification of laborers, workers, or mechanics employed upon the Work by Contractor and Subcontractors. Each Application for Payment submitted by Contractor will state that prevailing wages have been paid in accordance with the pre-filed Statements of Intent, as approved.

§ 3.4.5.4 Copies of the approved Statements of Intent will be posted on the Project job site(s) with the address and telephone number of the Industrial Statistician of the Department where a complaint or inquiry concerning prevailing wages may be made.

§ 3.4.5.5 Disputes regarding prevailing wage rates will be referred for arbitration to the Director of the Department. The arbitration decision will be final, conclusive, and binding on all parties involved in the dispute as provided for by RCW 39.12.060.

§ 3.4.5.6 In compliance with Chapter 296-127 WAC, Contractor will pay to the Department the currently established fee(s) for each Statement of Intent and/or affidavit of wages paid submitted to the Department for certification.

§ 3.4.5.7 Prior to release of the sums retained pursuant to Section 9.3.4 ("Retainage") and other provisions herein, Contractor and each Subcontractor shall submit to the Owner an Affidavit of Wages Paid approved by the Industrial Statistician of the Department and complying with the requirements of RCW 39.12.040.

§ 3.4.5.8 Without limiting the general duty of indemnification under Section 3.18, the Contractor shall defend, indemnify, and hold harmless the Owner, including for attorneys' fees, arising from any violation or alleged violation by the Contractor or any Subcontractor of any tier of Chapter 39.12 RCW ("Prevailing Wages on Public Works") and Title 51 RCW ("Industrial Insurance"), including without limitation RCW 51.12.050.

§ 3.4.5.9 The Contractor and each Subcontractor of any tier shall keep accurate payroll records for three (3) years from the effective date of the Contract showing each employee's full name, address, Social Security number, trade or occupation, classification, straight and overtime rates, hourly rate of usual benefits, and hours worked each day and week, including any employee authorizations executed pursuant to RCW 49.28.065, and the actual gross wages, itemized deductions, withholdings, and net wages paid, for each laborer, worker, and mechanic employed by the Contractor or Subcontractor for work performed on the Project. In addition, the Contractor and each Subcontractor shall file a copy of its certified payroll records using the Department's online system at least once per month. If said online system is not used, the Contractor or Subcontractor shall file a copy of its certified payroll records directly with the Department at least once per month. The Contractor shall include, or require to be included, in contracts with Subcontractors of any tier language substantially similar to this provision.

§ 3.4.6 Hours of Labor

§ 3.4.6.1 Contractor shall comply with all applicable provisions of Chapter 49.28 RCW ("Hours of Labor"). Pursuant to that statute, no laborer, worker, or mechanic employed by Contractor, any Subcontractor, or any other person performing or contracting to do the whole or any part of the Work, shall be permitted or required to work more than eight (8) hours in any one calendar day, provided, that in cases of extraordinary emergency, such as danger to life or property, the hours of work may be extended, but in such cases the rate of pay for time employed in excess of eight (8) hours of each calendar day will be not less than one and one-half (1.5) times the rate allowed for this same amount of time during eight (8) hours' service.

§ 3.4.6.2 Notwithstanding the preceding paragraph, Chapter 49.28 RCW permits the Contractor or a Subcontractor on any public works contract subject to those provisions to enter into an agreement with its employees in which the employees work up to ten (10) hours in a calendar day. No such agreement may provide that the employees work ten (10)-hour days for more than four (4) calendar days a week. Any such agreement is subject to approval by the employees. The overtime provisions of Chapter 49.28 RCW shall not apply to the hours, up to forty (40) hours per week, worked pursuant to any such agreement.

§ 3.4.7 Apprenticeship.

§ 3.4.7.1 The Contractor shall comply with the apprentice utilization requirement of RCW 39.04.320, as now enacted or hereafter amended, if applicable to the Project, and as such requirement may be adjusted by the Owner for this Contract pursuant to RCW 39.04.320(2). Sections 3.4.7.2 through 3.4.7.9 only apply in the event the Project is a public work estimated to cost $1 million or more.

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§ 3.4.7.2 The Contractor will ensure that no less than fifteen percent (15%) of the total labor hours utilized on the project are performed by apprentices registered with the Washington State Apprenticeship and Training Council. Total labor hours include additional hours worked as a result of Change Orders. Total labor hours exclude hours worked by foremen, superintendents, supervisors, owners, and workers who are not subject to prevailing wage requirements. However, total labor hours shall include the hours worked by supervisors, foremen, and superintendents if it is determined they are subject to prevailing wage requirements pursuant to WAC 296-127-015. Total labor hours include all hours worked by the Contractor and all Subcontractors on the Project.

§ 3.4.7.3 The Contractor will meet the apprentice utilization requirements of the Contract Documents on all labor hours on the Project. Pursuant to RCW 39.04.320(8), the Contractor or Subcontractor of any tier may not be required to exceed the apprenticeship utilization requirements of that statute.

§ 3.4.7.4 The Contractor will include the apprentice utilization requirements of this section in all subcontracts executed for the Project and ensure compliance with said requirements by Subcontractors.

§ 3.4.7.5 If, during the term of this Contract, the Contractor determines that it will be unable to meet the percentage utilization requirement in Section 3.4.7, the Contractor may make a written request to the Owner to reduce the required percentage. The request will include documentation of: (1) the Contractor's good faith efforts to use registered apprentices; (2) the lack of availability of registered apprentices; and/or (3) a disproportionately high ratio of material costs to labor hours, which makes infeasible the required minimum level of apprentice participation.

§ 3.4.7.6 The Owner will evaluate the request made under Section 3.4.7.5, and, if appropriate, a change order will be prepared by the Owner reducing the utilization requirement.

§ 3.4.7.7 During the term of this Contract, the Owner may adjust the apprenticeship labor hour requirement upon its finding or determination that includes:

1. A demonstration of lack of availability of apprentices in the geographic area of the Project;
2. A disproportionately high ratio of material costs to labor hours that does not make feasible the required minimum levels of apprenticeship participation;
3. Demonstration by participating contractors of a good faith effort to comply with the requirements of RCW 39.04.300, RCW 39.04.310, and RCW 39.04.320; or
4. Other criteria the Owner deems appropriate, which are subject to review by the Owner's Board of Directors.

§ 3.4.7.8 With its monthly Application for Payment, the Contractor shall report apprentice participation to the Owner on forms provided or approved by the Owner. In addition, copies of quarterly certified payroll records may be requested to document the goal, including copies with any birthdates and Social Security numbers (and any other sensitive personal information) redacted such that the copies may be used to respond to any public records requests. The reports shall include:

1. The name of the Project;
2. The dollar value of the Project;
3. The date of the Contractor's notice to proceed;
4. The name of each apprentice and apprentice registration number;
5. The number of apprentices and labor hours worked by them, categorized by trade or craft;
6. The number of journey level workers and labor hours worked by them, categorized by trade or craft; and
7. The number, type, and rationale for the exceptions granted.

§ 3.4.7.9 In accordance with RCW 39.04.320(4)(b), the monetary incentive for the Contractor meeting apprenticeship utilization requirements shall be payment of the sum of Five-Thousand Dollars ($5,000), which shall be due upon final payment. Without limiting any remedy that may be available to the Owner, the penalty for Contractor failing to meet apprenticeship utilization requirements will be a deduction of Ten-Thousand Dollars ($10,000) from the amounts due and payable to the Contractor hereunder, which amount shall be deducted from the final payment.

§ 3.4.8 The Contractor shall be responsible for labor peace on the Project and shall at all times use its best efforts and exercise its best judgment as an experienced contractor to adopt and implement policies and practices designed

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to avoid work stoppages, slowdowns, disputes, or strikes where reasonably possible and practical under the circumstances, and shall at all times maintain Project-wide labor harmony.

§ 3.4.9 Pursuant to Chapter 49.70 RCW ("Worker and Community Right to Know Act") and Chapter 296-901 WAC, the Contractor shall provide the Owner copies of and have available at the Project site a workplace survey or material safety data sheets for all hazardous chemicals under the control or use of Contractor or any Subcontractor of any tier at the Project site. The Contractor shall not be entitled to an increase in the Contract Time or Contract Sum arising from its failure or alleged failure to comply with this statute or regulation.

§ 3.4.10 All products and materials incorporated into the Project as part of the Work shall be certified as "asbestos-free" and "lead-free" by United States standards. At the completion of the Project, and using the forms provided or approved by the Owner, the Contractor shall submit certifications of asbestos-free and of lead-free materials certifying that all materials and products incorporated into the Work meet the requirements of this section.

§ 3.4.11 Materials shall conform to the manufacturer's standards in effect at the date of execution of the Contract Documents and shall be installed in strict accordance with the manufacturer's instructions, specifications, and directions. The Contractor shall, if required in writing by the Owner or Architect, furnish satisfactory evidence regarding the kind and quality of any materials, identifying thereon the source, and warranting their quality and compliance with the Contract Documents.

§ 3.5 Warranty

§ 3.5.1 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, may be considered defective. Unless such actions are caused by or are the responsibility of the ~~The~~ Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed or supervised by or through the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Owner or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. The Contractor is not relieved of its general warranty obligations by the specification of a particular product or procedure in the Contract Documents. Warranties in the Contract Documents shall survive completion, acceptance, final payment, and the correction period identified in Section 12.2.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4. The Contractor shall secure, assign if requested by the Owner, and furnish directly to the Owner all written warranties required by the Contract Documents, first executed by the applicable Subcontractor and those suppliers and manufacturers furnishing materials for the Work, and subsequently countersigned by the Contractor, which shall extend to the Owner all rights, claims, benefits, and interests that the Contractor may have under express or implied warranties or guarantees against the Subcontractor, supplier, or manufacturer for defective or non-conforming Work. Prior to furnishing Owner with written guarantees and warranties, the Contractor shall provide copies to the Architect for review.

§ 3.6 Taxes

The Contractor shall pay all taxes, including but not limited to sales, consumer, use, and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received ~~or negotiations concluded,~~ whether or not yet effective or merely scheduled to go into effect. The only taxes excluded from the Contract Sum and separately reimbursable are state and local sales taxes on the Contract Sum.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner shall pay only for the permits and associated plan-review fees that are explicitly listed as the Owner's responsibility in the Contract Documents or Bidding Documents, and the Contractor shall secure and pay ~~for the building permit as well as for other permits, fees, licenses,~~ as a part of the Contract Sum all other permits, fees, and licenses necessary for the execution of the Work, and inspections by government agencies necessary for proper execution and completion of the Work that are ~~customarily secured after execution of the Contract and~~ legally required at the time bids are ~~received or negotiations~~

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~~concluded.~~ received, including, without limitation: any building permits; all utility connection fees; subcontractor permits and fees, including plan-check fees for deferred submittals; the application fees and review fees for any and all shop drawings or bidder-designed systems; any inspection fees not covered by the initial building permit fee, including reinspection fees, renewals, and penalties; and miscellaneous, ancillary, and governmental fees, excepting only any permits that the Specifications explicitly indicate that the Owner is providing. The Owner shall also not pay, and the Contractor shall not be reimbursed for, any license fees or any renewals or penalties.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. The Contractor shall coordinate and schedule all Work with entities with jurisdiction over the Project site, permitting agencies, utility companies, and other such agencies determined to have jurisdictional authority necessary for completion of the Work. The Contractor shall keep the Owner informed of communications from these authorities and utilities. The Owner may assist the Contractor with such coordination and scheduling, but the Owner is not responsible for any delays caused by such permitting agencies, utility companies, and other such agencies determined to have jurisdictional authority. The Contractor shall be responsible for providing all information, documents, and fees to the permitting agencies, utility companies, and other such agencies determined to have jurisdictional authority within thirty (30) days after issuance of the Notice to Proceed as necessary to obtain and coordinate permits, utility and other such connections. The Contractor shall obtain all permit renewals during the course of the Work at the Contractor's expense. The Contractor is responsible for providing information and fees to the Department.

§ 3.7.3 If the Contractor observes that portions of the Contract Documents are at variance with applicable laws, statutes, ordinances, building codes, rules and regulations, or lawful orders of public authorities, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume ~~appropriate~~ responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in any soils reports or other reports made available by the Owner to the Contractor or in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide written notice to the Owner and the Architect before conditions are disturbed and in no event later than ~~14~~ five (5) working days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both, consistent with the requirements of the Contract Documents. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15. No increase to the Contract Sum or the Contract Time shall be allowed if the Contractor knew or reasonably should have known of the concealed conditions prior to its executing the Contract.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites, or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall immediately notify the Owner and Architect by telephone call and email. Upon receipt of such notice, the Owner and Architect by telephone call or email shall promptly coordinate with each other and take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations that may affect the human remains, burial markers, archaeological sites, or wetlands until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time, if any, arising from the existence of such remains or features ~~may~~must be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct,

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but the Contractor shall not be required to employ persons or entities to whom the Contractor has made reasonable, timely written objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, except sales tax on progress payments, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual reasonable costs and the allowances under Section 3.8.2.1, and (2) changes in Contractor's costs under Section 3.8.2.2, except where the allowance is based upon a unit price specified in the Agreement.

Allowances are defined in the Contract Documents due to the uncertainty in the scope, price, and quantity of the Allowance items at the time the Contract was executed. Whenever actual costs are more or less than the allowance, the Contract Sum will be adjusted accordingly by Change Order. The Contractor must provide the Owner with written notice of its intent to exceed an allowance amount, with estimates and justification (providing the Owner with the opportunity to approve or reject the excess costs), before exceeding an allowance amount.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner ~~with reasonable promptness.~~in sufficient time to avoid delay in the Work.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ an experienced, competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The Contractor shall also employ an experienced, competent Project Manager. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The superintendent shall be an employee of the Contractor and remain on the Project site whenever Subcontractors of any tier are present and, in any event, for not less than eight (8) hours per day, five (5) days per week, unless the job is closed due to a legal holiday, a general strike, conditions beyond the control of the Contractor, or termination of the Contract in accordance with the Contract Documents, or unless Final Completion is attained. The Project Manager shall also be an employee of the Contractor. The Contractor shall also have available for work on site experienced, skilled workers, such as carpenters, laborers, erection specialists, etc., to perform work as needed.

§ 3.9.2 The Contractor, ~~as soon as practicable~~ within seven (7) days after award of the Contract, shall notify the Owner and Architect in writing of the name and qualifications of a proposed Project Manager, Project Engineer, and superintendent. ~~Within 14 days~~ Within a reasonable time of receipt of the information, the Owner or Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed Project Manager, Project Engineer, or superintendent or (2) requires additional time for review. Failure of Owner or the Architect to provide notice within ~~the 14-day period~~ a reasonable time shall constitute notice of no reasonable objection. Within ten (10) days after issuance of the Conditional Notice to Proceed, the Contractor shall also furnish to the Architect and Owner:

.1 A chain-of-command organizational chart that includes all supervisory personnel, including the Project Manager, the Project Engineer, and the superintendent, assistant superintendent, and lead foreman that the Contractor intends to use on the Work. The chart shall specify any limits of authority for each person, including any limitation on his or her ability to speak for and bind the Contractor, as well as any limits on decision-making authority with respect to specific dollar values, Contract time, and issues affecting quality of the Work.

.2 Complete résumés, including all past and current projects, for the Project Manager, the Project Engineer, and the superintendent. The Owner intends to review the résumés and verify references, and it reserves the right to reject personnel reasonably believed to be unsuitable or incompatible for the Project. The Contractor shall replace any rejected personnel with an agreeable replacement at no increase in the Contract Sum or Contract Time.

.3 A list of telephone numbers for all key personnel of the Contractor and its principal subcontractors for purposes of contacting personnel after hours in the event of an emergency. The list shall be periodically updated as necessary to ensure the Owner has the most current information.

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§ 3.9.3 The Contractor shall not employ a proposed Project Manager, Project Engineer, or superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the Project Manager, Project Engineer, or superintendent without the Owner's consent~~, which shall not unreasonably be withheld or delayed~~. The Owner reserves the right, after consultation with the Contractor, to require the Contractor to replace a superintendent, Project Engineer, Project Manager, or other assistants if the Owner determines that such replacement is in the best interests of the Project. The Owner shall exercise such right in a reasonable manner. The Owner shall be entitled to exercise the same rights concerning any replacement.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly and within ten (10) days after being awarded the Contract, shall submit for the Owner's and Architect's information a ~~Contractor's construction schedule for the Work. The schedule~~ preliminary Contractor's construction schedule for the Work consistent with the requirements of the Contract Documents. Prior to submitting its first Application for Payment, the Contractor, after consultation with its Subcontractors, shall submit two color paper copies and an electronic copy of the Contractor's construction schedule consistent with the requirements of the Contract Documents. The Owner may withhold up to ten (10) percent of any progress payment until a satisfactory schedule is submitted. The schedule shall be related to the entire Project and shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion, as provided in the Agreement; (2) an apportionment of the Work by construction activity; ~~and~~ (3) the time required for completion of each portion of the Work, and (4) any other information required by the Contract Documents. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at ~~appropriate intervals~~ least monthly and as required by the conditions of the Work and Project.

§ 3.10.1.1 Contractor shall promptly notify the Owner and the Architect in writing of any proposed changes in the Contractor's construction schedule or the Contract Time or of any event which could delay performance of any item of the Work, stating the cause of the delay, expected duration of the delay, the anticipated effect of the delay on the Contractor's construction schedule, and the action being taken to correct the delay. Notification of potential delay does not constitute a change in the Contract Time: only a Change Order signed by the Owner can amend the Contract Time. The Contractor shall comply with Article 15 with regard to any delays that it believes are the responsibility of the Owner or are otherwise the subject of a Claim for additional Contract Time.

§ 3.10.1.2 If any Contractor's construction schedule submitted sets forth a date for Substantial Completion for the Work or for any phase of the Work beyond the dates of Substantial Completion established in the Contract Documents (as the same may be extended as provided in the Contract Documents), the Contractor shall submit to the Architect and the Owner for their review and approval a narrative description of the means and methods which the Contractor proposes to use to expedite the progress of the Work to ensure timely completion of the various phases of the Work and the Work as a whole. Regardless of the cause of any delay, the Contractor shall exercise reasonable efforts to bring the Project back into compliance with the Contractor's construction schedule.

§ 3.10.1.3 To the extent that the Contractor or any Subcontractor or material supplier of any tier is responsible for the delay, the Contractor shall take all necessary action to bring the Project back into compliance with the Contractor's construction schedule, including without limitation increasing the number of personnel on the Project and implementing overtime and double shifts at no cost to Owner.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter ~~as necessary to~~ at least monthly ~~maintain a current submittal schedule~~, shall submit a submittal schedule for the Owner and Architect's review. ~~approval. The Architect's approval~~ The Owner's and Architect's review shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Owner and Architect reasonable time to review submittals in accordance with the Specifications and submittal procedures. The Contractor shall also provide the Owner's project manager with a copy of all submittals at the same time. The Contractor should expect a response time of at least fourteen (14) days for the Architect's review and at least twenty-one (21) days for review by the Architect's consultants. Complex, inter-related, or multiple submittals will often take longer. Neither the Owner nor the Architect guarantee response times from governmental authorities, such as permitting agencies or review of any required deferred submittals. If the Contractor fails to submit ~~a~~ and update an acceptable submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

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§ 3.10.3 The Contractor shall perform the Work in ~~general~~ accordance with the most recent schedules submitted to the Owner and Architect and shall promptly notify the Owner and Architect of any substantial deviations from those schedules. The Contractor's Construction Schedule shall be based upon a critical path method ("CPM") analysis of construction activities and sequence of operations needed for the orderly performance and completion of all separable parts of the Work, in the form of a precedence diagram and activity listing that is time-scaled, all in accordance with the Contract and within the Contract Time. The Contractor shall utilize scheduling software for its CPM scheduling. The Schedule shall be resource loaded and provided to the Owner in electronic, readable format. It shall include the Date of Commencement, any milestone dates identified in the Specifications, the Date(s) of Substantial Completion, and the Date(s) of Final Completion in accordance with the Contract Documents. The Schedule shall be updated monthly and submitted with the Contractor's Application for Payment. The Critical Path shall be clearly indicated on the Contractor's Construction Schedule.

§ 3.10.4 The Contractor shall not be entitled to any adjustment in the Contract Time, the Contractor's Construction Schedule, or the Contract Sum, or to any additional payment of any sort by reason of the loss or use of any float time, including time between the Contractor's anticipated completion date and end of the Contract Time, whether or not the float time is described as such on the Contractor's Construction Schedule. To ensure that the Owner is substantively aware and effectively able to mitigate any Project delays, the Contractor shall not be entitled to any extension of time, compensable or otherwise, for any delay that occurred during any time the Contractor has not timely submitted an updated Construction Schedule as required by the Contract Documents.

§ 3.10.5 Any float time to activities not on the critical path shall belong to the Project, and such float time may be used by the Project to optimize its construction process. Any float time between the end of the final construction activity and the final completion date shall belong to the Owner, and may be used by the Owner in determining if additional Contract Time is to be awarded for changes in the Contract or for delays caused by the Owner. The Contractor will not be entitled to any adjustment in the Contract Time, the Construction Schedule, or the Contract Sum, or to any additional payment of any sort by reason of the Owner's use of float time between the end of the final construction activity and the final completion date or be reason of the loss or use of any float time, including time between the Contractor's anticipated completion date and end of the Contract Time, whether or not the float time is described as such on the Contractor's Construction Schedule.

§ 3.10.6 The Contractor shall attend and participate in, and ensure applicable Subcontractors of any tier attend and participate in:

.1 A preconstruction meeting;

.2 Regular weekly on-site Project status meetings scheduled by the Owner or by the Architect to review progress of the Work, to discuss the Contractor's progress reports, to obtain necessary Owner's or Architect's approvals, and generally to keep the Owner and Architect informed and involved in the progress of the Project. Contractor responsible for creating meeting agenda and keeping meeting minutes; and

3 Other meetings scheduled from time to time by the Owner or by the Architect to review progress of the Work and other pertinent matters.

§ 3.11 Documents and Samples at the Site

The Contractor shall maintain at least weekly and make available, at the Project site, a record copy of the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and a record copy of the approved or accepted Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form ~~or~~ and paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed. The location of all existing or new hidden piping, valves, conduit, cabling, and utilities, as located during the course of construction, shall be appropriately marked until the actual field location dimensions and coordinates are incorporated on the as-built drawings, and mechanical and electrical deviations and changes shall be included. The documents shall include all Architectural, Mechanical, Electrical, Structural, Landscape, and Civil as-built drawings, whether changes occur or not, using Owner-approved drawing/document software. These documents, as well as the approved permit set of plans, shall be available to the Architect and Owner at the site and reviewed with them on a monthly basis. Upon Final Completion of the Work, the Contractor shall transfer all as-built information in a clear and legible manner as described in the Contract Documents and in compliance with all requirements of local governmental entities, shall certify in writing that these documents reflect complete and accurate "as-built" conditions, and shall deliver each of

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the following in a clear, clean, and legible manner and in compliance with all requirements of local governmental authorities: (1) complete, integrated copies of the documents in both paper form in good condition and in electronic form in the same format as originally created by the Architect or as electronic PDF, (2) the approved permit set of plans, and (3) the full-size record documents, Shop Drawings, Specifications, Addenda, maintenance manuals, and warranties to the Architect for submittal to the Owner in accordance with the provisions of the Contract Documents. Satisfactory maintenance of up-to-date as-built drawings on a monthly basis shall be a requirement for approval of progress payments.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples and/or assemblies or mock-ups that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review and approval or acceptance of such submittals by the Owner or Architect is subject to the limitations of Section 4.2.7 and shall not constitute an approval or acceptance of the Contractor's means and methods or a waiver or modification of any requirement of the Contract Documents. Informational submittals upon which the Owner or Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Owner or Architect without action.

§ 3.12.5 The Contractor shall be responsible for tracking the status of submittals. The Contractor shall review for compliance with the Contract Documents, note any deviations from the Contract Documents, approve in writing, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule ~~approved~~ accepted by the Owner and Architect or, in the absence of an ~~approved~~ accepted submittal schedule, with reasonable promptness and frequency and in such sequence and uniform flow rate consistent with the submittal schedule as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors. The Contractor shall notify the Owner and Architect of any expedited review required. Submittals that are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action, which will not constitute an Owner-caused delay to the Contractor. At the time of submission, the Contractor shall inform the Architect in writing whether expedited review is requested or if there is any deviation in the Shop Drawings, Product Data, or Samples from the requirements of the Contract Documents. So far as practicable, each Shop Drawing or Product Data submittal shall bear a cross-reference note referring to Drawing or detail numbers on the Drawings showing the same Work in order to facilitate checking of Shop Drawing or Product Data and their prompt return to the Contractor. Shop Drawings for interrelated Work shall be submitted at approximately the same time. Unless otherwise directed in writing, the Contractor shall provide submittals electronically. The Contractor shall keep accurate records of the receipt, review, and delivery of all Submittals and shall submit to the Owner reports every other week on the status of their review, identifying the location and the causes of any failure to promptly receive such submissions and suggesting responsibility.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements, and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

.1 Each submittal shall bear a stamp or specific written indication that the Contractor has satisfied its responsibilities under the Contract Documents with respect to the review of the submission. The Contractor's superintendent must initial each submittal.

.2 Each submittal shall be accompanied by a completed Submittal Cover Sheet, as included in the Project Manual or provided by the Architect, which shall clearly identify applicable Specification

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Section and paragraph number(s), material, supplier, pertinent data (such as catalog numbers), and the use for which it is intended.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review and acceptance of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been ~~approved~~ reviewed and no exceptions taken by the Architect.

§ 3.12.8 The Work shall be in accordance with ~~approved~~ accepted submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's review, acceptance, or approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written ~~approval~~ acceptance to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's review, acceptance, or approval thereof. Any corrections or modifications to Shop Drawings made by the Architect shall be deemed accepted by the Contractor, without change in Contract Sum or Contract Time, unless the Contractor provides the Architect with written notice at least three (3) working days before commencing any Work from such Shop Drawings and complies with the change procedures in the Contract Documents. The Contractor shall make all corrections requested by the Architect and, when requested by the Architect, provide a corrected Submittal without change in the Contract Sum or Contract Time.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval or acceptance of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided by the Owner or Architect in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

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§ 3.12.11 Any mechanical systems shown in the Drawings are diagrammatic. (Other Drawings may also be diagrammatic.) The Contractor shall provide dimensioned Shop Drawings and details for all plumbing piping, ductwork, heating system piping, underground hot water piping, hot water boilers, and accessories to indicate complete systems. Shop Drawings shall be to 1/4" = 1'-0" minimum scale in all mechanical rooms, boiler rooms, as well as where accuracy or location is necessary for coordination or installation purposes. Ductwork Shop Drawings shall include a separate drawing to not less than 1/4" = 1'-0" scale showing all duct penetrations through structure (floors, roof, and walls) dimensioned, and all equipment locations, weights and pad details for all HVAC equipment. Critical dimensions of all equipment pad and pipe or duct penetrations through the structure shall be included.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. There shall be no use of existing on-site facilities (parking, toilets, etc.) without the Owner's prior approval. Portions of the site may be occupied and in use during construction. The Contractor is responsible to coordinate its Work with any such occupation or use at no increase to the Contract Sum or Contract Time and at no disruption to the occupancy or use.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to access or complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.14.3 Existing structures and facilities, including but not limited to buildings, landscaping, utilities, topography, streets, curbs, and walks, that are damaged or removed due to excavations or other construction Work of the Contractor, shall be patched, repaired, or replaced by the Contractor to the satisfaction of the Architect, the owner of such structures and facilities, and governmental authorities having jurisdiction. In the event the governmental authority requires that the repairing and patching be done with its own labor and/or materials, the Contractor shall abide by such regulations and it shall pay for such Work at no change in the Contract Sum or Contract Time.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. The Contractor shall furnish portable containers on site for use by all trades. At the Owner's request and, in any event, at the completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor for any clean-up costs. The Contractor shall only use waste receptacles provided by the Contractor and shall appropriately dispose of any waste material off site.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with keyed access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, or if the Contractor has reason to believe

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that the required design, process, or product is an infringement of a copyright or patent, then the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law and subject to the conditions of this Section 3.18, the Contractor shall defend, indemnify, and hold harmless the Owner, its directors, officers, employees, consultants, project manager, students, and volunteers, the Architect, the Architect's consultants, and agents ~~and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees,~~ employees, and the successors and assigns of any of them ("Indemnified Parties") from and against all claims, damages, losses, and expenses, direct and indirect, or consequential, including but not limited to costs, design professional and consultant fees, and attorneys' fees incurred on such claims and in proving the right to indemnification, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor of any tier, their agents, or anyone directly or indirectly employed by them, or anyone for whose acts they may be liable ("Indemnitor"), regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.1.1 The Contractor shall fully defend, indemnify, and hold harmless the Indemnified Parties for the sole negligence of the Indemnitor.

§ 3.18.1.2 If such claims are caused by or are resulting from the sole negligence of the Indemnified Parties or their agents or employees, then the Contractor shall have no duty to defend, indemnify, and hold harmless the Indemnified Parties.

§ 3.18.1.3 If such claims are caused by or are resulting from the concurrent negligence of (1) the Indemnified Parties or the Indemnified Parties' agents or employees, and (2) the Contractor or the Contractor's agents or employees, then the Contractor shall be obligated to defend, indemnify, and hold harmless the Indemnified Parties only to the extent of the Indemnitor's negligence.

§ 3.18.1.4 The Contractor agrees to being added by the Owner or the Architect as a party to any arbitration or litigation with third parties in which the Owner or Architect alleges indemnification or contribution from the Contractor, any of its Subcontractors of any tier, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable. The Contractor agrees that all of its Subcontractors of any tier shall, in their subcontracts, similarly stipulate; in the event any does not, the Contractor shall be liable in place of such Subcontractor(s) of any tier.

§ 3.18.1.5 To the extent any portion of this Section 3.18 is stricken by a court of competent jurisdiction for any reason, all remaining provisions shall retain their vitality and effect.

§ 3.18.1.6 The obligations of the Contractor under this Section 3.18 shall not be construed to negate, abridge, or otherwise reduce any other right or obligations of indemnity which would otherwise exist as to any party or person described in this Section 3.18. To the extent the wording of this Section 3.18 would reduce or eliminate an available insurance coverage of the Contractor or the Owner, this Section 3.18 shall be considered modified to the extent that such insurance coverage is not affected.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor of any tier, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor of any tier under workers' compensation acts, disability benefit acts, or other employee benefit acts. After mutual negotiation of the parties, the Contractor waives immunity as to the Owner, the Architect, and their respective consultants only under Title 51 RCW ("Industrial Insurance)." IF THE CONTRACTOR DOES NOT AGREE WITH THIS WAIVER, IT MUST PROVIDE A WRITTEN NOTICE TO THE OWNER PRIOR TO THE DATE FOR THE RECEIPT OF BIDS, OR THE CONTRACTOR WILL BE DEEMED TO HAVE NEGOTIATED AND WAIVED THIS IMMUNITY.

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§ 3.19 Contractor will immediately report to the Owner any failure by the Contractor, a Subcontractor of any tier, or any third party observed by the Contractor to comply with applicable laws, regulations, or ordinances while performing the Work or upon the Project, including, but not limited to, those related to environmental compliance, spills, unauthorized fill in waters of the State (including wetlands), water quality standards, noise, and air quality.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement. The term "Architect" means the Architect or the Architect's authorized representative and does not include any employees of the Owner.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, ~~Contractor,~~ and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The ~~Architect~~ Owner's project manager will administer the Contract. The Architect will assist in ~~provide administration of~~ administering the Contract as described in the Contract Documents and will be an Owner's representative (but not the Owner's agent) during construction until the date the Architect issues the final Certificate for Payment and from time to time during the one (1) year period for correction of Work. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract. Neither the Architect nor the Owner's project manager is the agent of the Owner and neither is authorized to agree on behalf of the Owner to changes in the Contract Sum or Contract Time, nor to waive provisions of the Contract Documents, nor to direct the Contractor to take actions that change the Contract Sum or Contract Time, except that the Owner's representative may issue Construction Change Directives in accordance with Section 7.3.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with and to keep the Owner reasonable informed about the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ~~The Architect will not~~ Neither the Architect nor the Owner shall have control over, charge of, or responsibility for the construction means, methods, techniques, sequences, or procedures, or for the safety precautions and programs in connection with the Work, ~~since~~ because these are solely the Contractor's rights and responsibilities under the Contract Documents. The presence of the Architect or the Owner at the site shall not in any manner be construed as assurance that the Work is being completed in compliance with the Contract Documents, nor as evidence that any requirement of the Contract Documents of any kind, including notice, has been met or waived. The Contractor shall reimburse the Owner for any amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. ~~The Architect will not~~ Neither the Architect nor the Owner shall be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. ~~The Architect will not~~ Neither the Architect nor the Owner shall have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work. Neither the Architect nor the Owner shall be responsible for defining the extent of any subcontract or dealing with disputes between the Contractor and third parties.

§ 4.2.4 Communications

The Owner and Contractor shall endeavor to include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Contractor shall simultaneously provide the Owner's project manager with a copy of all written communications the Contractor makes to the Architect, including all notices, requests, transmittals, substitutions, RFIs, Claims, and potential changes in the Contract Sum or Contract Time, but not including Shop Drawings, Product Data, or Samples. Claims must be directed to the Owner. The

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Owner shall endeavor to promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through ~~the Owner.~~ Owner's project manager. The Contract Documents may specify other communication protocols. Communications may be simultaneously copied to other recipients.

§ 4.2.5 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will ~~review and certify~~ make recommendations to and otherwise assist the Owner to determine the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 ~~The Architect has~~ Both the Architect and the Owner have authority to reject Work that does not conform to the Contract Documents. Whenever the Architect or the Owner considers it necessary or advisable, the Architect or the Owner will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed, or completed. However, neither this authority of the Architect or the Owner nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Owner or their representatives to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, accept, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, ~~and~~ Samples, and other submittals required by the Contract Documents, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with reasonable promptness in accordance with the submittal schedule ~~approved~~ accepted by the Architect or, in the absence of an ~~approved~~ accepted submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, weights or gauges, fabrication processes, coordination with the Work of other trades, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval or acceptance of a specific item shall not indicate approval of an assembly of which the item is a component. The Contractor shall clearly note, and the Architect shall not be required to search for, any deviations from the Contract Documents not clearly identified by the Contractor, nor shall the Architect be required to review partial submissions or those for which submission for correlated items have not been received. Regardless of how a submittal is marked, the Contractor should not presume that the Architect has reviewed a submittal in every aspect.

§ 4.2.8 The Architect or Owner will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will ~~conduct inspections~~ make observations, make recommendations, and otherwise assist the Owner to determine the date or dates of Substantial Completion and the date of ~~final completion~~Final Completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents and pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor ~~of any change in the~~ in writing of any changes to the duties, responsibilities, and limitations of authority of the Project representatives that are described in the Contract Documents. Without such written notification, the duties, responsibilities, and limitations of authority of the Project representatives are as described in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the ~~Contract Documents~~ Drawings and Specifications and any modifications thereto on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits

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agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Section 4.2.11, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until fifteen (15) days after written request is made for them.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Architect will endeavor to secure faithful performance of the Contract Documents by both Owner and Contractor, will not show partiality to either, and will not be liable to the Contractor for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents and agreeable to the Owner.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site or to supply materials or equipment. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site or to supply materials or equipment. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.1.3 A Subcontractor of any tier is a Subcontractor or a Sub-subcontractor.

§ 5.1.4 The designation of terms in this Section is not meant to change or alter the definitions contained in Chapter 60.28 RCW ("Lien for Labor, Materials, Taxes on Public Works"); Chapter 39.12 RCW ("Prevailing Wages on Public Works"); or other statutory definitions of a subcontractor for the purposes of such statutes.

§ 5.1.5 A "responsible" Subcontractor is a person or entity who is qualified and can document training, experience, license, and special certification to perform Work, supply materials, or provide equipment required and specified by the Contract Documents.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, ~~the Contractor, as soon as practicable after award of the Contract,~~ within ten (10) days after the Owner's issuance of the Conditional Notice to Proceed, the Contractor shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work (i.e., at least two (2) percent of the Contract Sum), including those who are to furnish materials or equipment fabricated to a special design. The Contractor shall organize this list of Subcontractors in the same sequence as the Index of Specification, and state the Work category followed by the name of the Subcontractor and/or fabricator (or "Contractor" where the portion of the Work is by the Contractor's own forces), including the address, telephone number, individual name of the project contact, and his or her email address. The list shall be accompanied by evidence of any qualifications required within the technical sections of the Project Manual and satisfactory to the Architect and Owner. The list shall be updated promptly as part of the payment process if additional Subcontractors of any tier are engaged. If the Agreement is executed, no progress payment will become due until this information is so furnished. No action or inaction of the Owner or Architect in response to receipt of the names of the proposed Subcontractors of any tier shall constitute approval of any Subcontractor of any tier or of its performance. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review.

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"Reasonable objection" shall include, without limitation, lack of "responsibility" of the proposed Subcontractor, as defined in the Contract Documents or the Bidding Documents, or lack of qualification as required within the bidding documents or the technical sections of the Project Manual. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection. If the Owner makes a reasonable objection, the Contractor shall replace the Subcontractor with no increase to the Contract Sum or Contract Time. Such a replacement shall not relieve the Contractor of its responsibility for the performance of the Work and compliance with all of the requirements of the Contract within the Contract Sum and Contract Time.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made ~~reasonable objection.~~ a timely and reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor~~,~~ or a Subcontractor as not "responsible," the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was qualified, "responsible," and reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued ~~before commencement of the substitute Subcontractor's Work~~. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting ~~names as required.~~ qualified names as required. In addition, no increase in the Contract Sum or Contract Time shall be allowed for such change if: (1) the Owner reasonably concludes that a proposed Subcontractor of any tier has materially failed to perform satisfactorily (such as causing a material delay) on one or more projects for the Owner within three years of the bidding date or is otherwise not "responsible" as defined in the Contract Documents, the Bidding Documents, RCW 39.26.160(2), or Chapter 39.04 RCW; (2) the proposed Subcontractor is not qualified as required within the technical sections of the Project Manual; or (3) the proposed Subcontractor is different from the entity listed with the Bid. The proposing of a replacement Subcontractor shall not relieve the Contractor of its responsibility for the performance of the Work or compliance with all of the requirements of the Contract within the Contract Sum and Contract Time. The Contractor's listing or use of any Subcontractor that is not "responsible" shall be sufficient cause for the Owner to declare that the Contractor is not a responsible bidder, unless the Contractor agrees to substitute a responsible Subcontractor at no change to the Contract Sum or Contract Time.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution. If the Owner reasonably concludes that any portion of the Work subcontracted by the Contractor is not being performed in accordance with the Contract Documents, the Contractor shall, upon request of the Owner, remove the Subcontractor performing such Work. This removal shall not relieve the Contractor of its responsibility for the performance of the Work or complying with all of the requirements of the Contract within the Contract Sum and Contract Time, nor shall the Owner be obligated to request any such removal.

§ 5.2.5 The Contractor shall perform with its own organization and under its immediate supervision a portion of the Work, not including general conditions, amounting to not less than the percentage (if any) of the total original Contract Sum specified in the Contract Documents or in the Bidding Documents.

§ 5.2.6 The Contractor shall verify responsibility criteria for each first-tier Subcontractor. A Subcontractor of any tier that engages other Subcontractors must verify responsibility criteria for each of its lower-tier Subcontractors. Verification shall include that each Subcontractor, at the time of subcontract execution, meets the responsibility criteria listed in the Instructions to Bidders or Specifications.

§ 5.2.7 The Contractor shall schedule, supervise, and coordinate the operations of all Subcontractors of any tier. No subcontracting of any of the Work shall relieve the Contractor from its responsibility for the performance of the Work in accordance with the Contract Documents or from its responsibility for the performance of any other of its obligations under the Contract Documents. The Contractor is responsible for the timely, accurate, and appropriate Subcontractor coordination of the Work of lower tier Subcontractors in accordance with the overall Work, including communication, meetings, drawings, illustrations, and other necessary associated activities required for the successful coordination of all trades, schedules, materials, and workmanship.

§ 5.2.8 The Contractor agrees to diligently, and using its best efforts, cause each Subcontractor of any tier to correct, at that Subcontractor's own expense, all Work performed by the Subcontractor of any tier that is defective in

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material or workmanship or otherwise fails to conform to the Contract Documents, including all necessary removal, replacement, and/or repair of any other portion of the Project which may be damaged in removing, replacing, or repairing any portion of the Project. If any Subcontractor of any tier defaults in its obligation promptly to correct any such deficiency, the Contractor shall be responsible for correcting the deficiency.

§ 5.2.9 The Contractor shall provide, and shall cause its Subcontractors of any tier to provide, all required notices and comply with all applicable health and safety laws, rules, regulations, codes, and lawful orders of public authorities and of quasi-governmental authorities relating to the Work, including, without limitation, all Occupational Safety and Health Act of 1970 (OSHA) and Washington Industrial Safety and Health Act (WISHA) requirements.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors. Upon request, the Contractor shall provide to the Owner copies of the written agreements between the Contractor and any Subcontractor, and a Subcontractor and any Sub-subcontractor.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner ~~for cause~~ pursuant to Section 14.2 or 14.4 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract, but only for events and payment obligations that arise after the date of the assignment.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than ~~30~~ sixty (60) days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. ~~If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

§ 5.5 LIENS

§ 5.5.1 The Contractor shall promptly pay (and secure the discharge of any liens asserted by) all persons properly furnishing labor, equipment, materials, or other items in connection with the performance of the Work (including, but not limited to, any Subcontractors of any tier) to the extent that the Owner has paid the Contractor for such. The Contractor shall furnish to the Owner such releases of liens and Claims and other documents monthly with its payment application to evidence such payment (and discharge). The Owner may, at its option, withhold payment, in whole or in part, to the Contractor until such documents are furnished. The Contractor may provide other security acceptable to the Owner, such as a bond, in lieu of paying disputed liens or Claims.

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§ 5.5.2 The Contractor shall defend, indemnify, and hold harmless the Owner from any liens, including all expenses and Architect and attorneys' fees, except to the extent a lien has been filed because of the failure of the Owner to make a contractually required payment.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement with the Owner. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents. If the Contractor receives items from a separate contractor or from the Owner for storage, erection, or installation, the Contractor shall acknowledge receipt for items delivered, and thereafter will be held responsible for the care, storage, and any necessary replacement of items received.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Owner and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Owner and Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not reasonably discoverable or apparent.

§ 6.2.3 The Contractor shall reimburse and indemnify the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities, or defective construction. ~~The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.~~ If the Contractor claims that delay or additional cost is involved because of Owner's performance of work or the Owner's use of Separate Contractors, the Contractor shall make such Claim as provided in Article 15, except that the Contractor shall have no Claim for such construction or operations to the extent disclosed in the Bidding Documents or Contract Documents or known to the Contractor prior to execution of this Contract. The Contractor is also responsible to coordinate its Work with any other entities performing work on or adjacent to the site, such as work in the right of way and work by utility companies, and the Contractor shall incorporate such work into its construction schedule.

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§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.2.6 Should the Contractor or any of its Subcontractors of any tier cause damage of any kind, including but not limited to delay, to any Separate Contractor or its Subcontractors on the Project, the Contractor shall, upon due notice, promptly attempt to settle with such Separate Contractor or its Subcontractor by agreement or otherwise to resolve the dispute.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible plus a ten percent (10%) markup on such costs.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, solely by Change Order, Construction Change Directive, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect or Owner alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.1.4 Before effectuating a change in the Work or in the Contract Documents, the Owner may, through a Change Order proposal or similar document, request the Contractor to propose the amount of change in the Contract Sum, if any, and the extent of change in the Contract Time, if any, arising from the proposed change in the Work. The Contractor shall submit its responsive proposal as soon as possible, and in any event within ten (10) days. Contractor shall in good faith specify the components and amounts by which the Contract Sum and/or Contract Time would change. Labor, materials, and equipment shall be limited to and itemized in the manner described in Section 7.5 for the Contractor and Subcontractors of any tier. If the Contractor fails to respond within this time, the Owner may withhold some or all of a progress payment otherwise due until the tardy proposal is received. If the Owner explicitly accepts the proposal in writing, the Owner and the Contractor will be immediately bound to the terms of the proposal, the change will be included promptly in a future Change Order, and the change in the Work described in the proposal shall commence expeditiously. The Owner may reject the proposal, in which case the Owner may either not effectuate the change in the Work or may order the change through a Construction Change Directive, supplemental instruction, or an order for a minor change in the Work. The Owner and Architect may confer directly with Subcontractors of any tier concerning any item proposed to the Owner under this Article.

§ 7.1.5 If the Contractor adds a reservation of rights that has not been initialed by the Owner to any Change Order, Construction Change Directive, Change Order proposal, Application for Payment, or any other document, all amounts and all Work therein shall be considered disputed and not due or payable unless and until costs are renegotiated or the reservation is withdrawn or changed in a manner satisfactory to and, in all cases, initialed by the Owner. If the Owner makes payment for a Change Order or an Application for Payment that contains a reservation of rights not initialed by the Owner to indicate agreement with the reservation, and if the Contractor negotiates the check for such payment, then the reservation of rights shall be deemed waived, withdrawn, and of no effect.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Contract Documents, including any change in the Work;

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.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly. The Owner's use of a Construction Change Directive does not constitute agreement that the directive constitutes a change in the Work, the Contract Sum, or the Contract Time. The Owner or Architect may also issue a Field Authorization, or the Owner, Architect, and Contractor may agree to a Construction Change Authorization, to effectuate changes in the Work. For any change in the Work, whether initiated by a Construction Change Directive, Field Authorization, Construction Change Authorization, or a Change Order proposal, the Contractor must submit its proposed price and any proposed extension of the Contract Time to the Owner within ten (10) days of the date of the Construction Change Directive, Field Authorization, Construction Change Authorization, or a Change Order proposal. If the Contractor fails to submit a proposed price and time within this time period, the Owner may establish what it believes to be the fair price of the changed work, and any additional Contract Time, and this price and time submitted by the Owner shall be final and binding upon the parties, as if they had signed a Change Order in this amount, without recourse to submitting any claims or litigation. Payment for any Changes to the Work shall not exceed the labor and equipment indicated on the daily work logs.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods or as mutually agreed in writing by the Owner and Contractor:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties (accompanied by the Contractor's itemized estimate of probable cost) and a mutually acceptable fixed or percentage fee; or
.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, ~~the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present,~~ or if the cost is to be determined under Section 7.3.3.3, the Contractor shall provide a not-to-exceed price for the Construction Change Directive Work within fourteen (14) days of receipt of the Construction Change Directive, and the Contractor shall keep and present, itemized in the categories of Section 7.5 and in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. ~~Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:~~

~~.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;~~
~~.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;~~
~~.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;~~
~~.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and~~
~~.5 Costs of supervision and field office personnel directly attributable to the change.~~

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor ~~may~~ must make a Claim in accordance with applicable provisions of Article 15 or such claim will be waived.

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§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and as soon as possible, and within seven (7) days of receipt, the Contractor shall advise the Architect and Owner in writing of the Contractor's agreement or disagreement with the proposed adjustment or method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time. The Contractor's response shall reasonably specify the reasons for its disagreement and the adjustment or other terms that it proposes. Without such timely written response, the Contractor shall conclusively be deemed to have accepted the Owner's adjustment. The Contractor's disagreement shall not relieve the Contractor of its obligation to comply promptly with any written notice issued by the Owner or the Architect. The adjustment shall then be determined by the Architect in accordance with the provisions of the Contract Documents. The ultimate adjustment shall not exceed the larger amount submitted.

§ 7.3.6.1 In order to facilitate checking of such quotations, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by complete itemization of costs, including labor, equipment, material, and subcontract costs. Labor, equipment, and materials shall be itemized in the manner described in Section 7.5. When major cost items arise from Subcontractors of any tier, these items shall also be similarly itemized. Approval may not be given without such itemization. Failure to provide data within twenty-one (21) days of the Owner's or Architect's request shall constitute waiver of any Claim for changes in the Contract Time or Contract Sum. The total cost of any change, including a Claim under Article 15, shall be limited to the reasonable value, as determined by the Owner (subject to appeal through the dispute resolution procedure of Article 15), of the items in Section 7.5. Unless otherwise agreed in writing by the Owner, the cost shall not exceed the lower of the prevailing cost for the Work in the locality of the Project or the cost of the Work in the current edition of R.S. Means Company, Inc., Building Construction Cost Data as adjusted to local costs and conditions. The Architect and the Owner may communicate directly with Subcontractors of any tier concerning costs of any Work included in a Construction Change Directive. If the Contractor disagrees with the method or the adjustment in the Contract Time, the adjustment or method shall be referred to the Architect for determination, and any adjustment shall be limited to the change in the actual critical path of the Contractor's Construction Schedule directly caused thereby.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including any adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be the largest of (1) the reasonable and prevailing value of the deletion or change, (2) the line item value in the Schedule of Values, or (3) the actual net cost as confirmed by the ~~Architect.~~ Owner. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, ~~the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.~~ and provided that any reservations of rights regarding the Construction Change Directive have been initialed by the Owner, amounts not in dispute for such changes in the Work may be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and ~~the Architect will prepare~~ shall be recorded in a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect or the Owner may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's or Owner's order for minor changes shall be in writing. The Contractor shall carry out such written orders promptly. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Owner and Architect and shall not proceed to implement the

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change in the Work unless directed otherwise in writing by the Owner. If the Contractor continues to believe that such order, or the response to a Request for Information, causes an increase in the Contract Sum or Time, the Contractor must properly submit a notice and Claim pursuant to Article 15. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect and Owner that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

§ 7.5 PRICING COMPONENTS

§ 7.5 The total cost of any Change in the Work or of any other increase or decrease in the Contract Sum, including a Claim, shall be limited to the following components:

§ 7.5.1 Direct Labor Costs: These are the labor costs determined by the number of additional craft hours and the hourly costs necessary to perform the change in the Work. The hourly cost shall be based upon the following:

.1 Basic wages and fringe benefits: The hourly wage (without markup or labor burden) and fringe benefits paid as established by the Washington Department of Labor and Industries or contributed to labor trust funds as itemized fringe benefits, whichever is applicable, not to exceed that specified in the applicable "Intent to Pay Prevailing Wage" for the laborers, apprentices, journeymen, and foremen performing and/or directly supervising the Change in the Work on the site. The premium portion of overtime wages is not included unless preapproved in writing by the Owner. Costs paid or incurred for vacations, per diem, subsistence, housing, travel, bonuses, stock options, or discretionary payments to employees are not separately reimbursable. The Contractor shall provide copies of certified payrolls for itself and Subcontractors of any tier upon the Owner's request.

.2 Workers' insurances: Direct contributions to the State of Washington as industrial insurance; medical aid; and supplemental pension by class and rates established by the Washington Department of Labor and Industries.

.3 Federal insurances: Direct contributions required by the Federal Insurance Compensation Act (FICA); Federal Unemployment Tax Act (FUTA); and State Unemployment Compensation Act (SUCA).

Upon the Owner's request, the Contractor shall substantiate all claimed wage rates and shall provide a breakdown of the various components of the labor costs in a form provided or approved by the Owner.

§ 7.5.2 Direct Material Costs: This is an itemization, including material invoice, of the quantity and cost of additional materials reasonable and necessary to perform the change in the Work. The unit cost shall be based upon the net cost after all discounts or rebates, freight costs, express charges, or special delivery costs, when applicable. No lump sum costs will be allowed except when approved in advance by the Architect and the Owner. If the Contractor is offered discounts and/or rebates based upon prompt payment, the Contractor shall offer the Owner the opportunity to take advantage of such discount and/or rebate, and if the Owner makes such a prompt payment then the Owner shall only be charged the price as reduced by the discount and/or rebate. If the Owner declines the opportunity the Contractor may keep any such discounts and/or rebates it achieves through its own prompt payment. If the Contractor does not provide the Owner the opportunity to participate, the Contractor may only charge the net costs after consideration of discounts and rebates.

§ 7.5.3 Construction Equipment Usage Costs: This is an itemization of the actual length of time that construction equipment appropriate for the Work will be used solely on the change in the Work at the site, multiplied by the applicable rental cost as established by the lower of the local prevailing rate published in the "Rental Rate Blue Book" by EquipmentWatch, Atlanta, Georgia (copies of which shall be provided to the Owner), as modified by the AGC/WSDOT agreement or the actual, reasonable rate paid to unrelated third parties as evidenced by rental receipts. Rates and quantities of equipment rented that exceed the local fair market rental costs shall be subject to the Owner's prior approval. Total rental charges for equipment or tools shall not exceed seventy-five percent (75%) of the fair market purchase value of the equipment or the tool. Actual, reasonable mobilization costs are permitted if the equipment is brought to the Site solely for the change in the Work. If more than one rate is applicable, the best available rate shall be utilized. The rates in effect at the time of the performance of the changed Work are the maximum rates allowable for equipment of modern design and in good working condition and include full compensation for furnishing all fuel, oil, lubrication, repairs, maintenance, and insurance to the same extent as the comparable Blue Book or fair market rate. Equipment not of modern design and/or not in good working condition shall have lower rates. Hourly, weekly, and/or monthly rates, as appropriate, shall be applied to yield the lowest total cost. When rental rates payable do not include fuel, lubrication, maintenance, and servicing, as defined as operating

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costs in the Blue Book, such operating costs shall be reimbursed based on actual costs. The rate for equipment necessarily standing by for future use on the changed Work shall be no more than fifty percent (50%) of the rate established above. If equipment is required for which a rental rate is not established by Blue Book, an agreed rental rate shall be established for that equipment, which rate and use must be approved by the Owner prior to performing the Work.

§ 7.5.4 Cost of Change in Insurance or Bond Premium: This is defined as:

.1 Contractors' liability insurance: The actual cost (expressed as a percentage submitted with the certificate of insurance provided under Section 11.3.1.1, and subject to audit) of any changes in the Contractor's liability insurance arising directly from the changed Work; and

.2 Public works bond: The actual cost (expressed as a percentage submitted with evidence of bondability under Section 11.6, and subject to audit) of the change in the Contractor's premium for the Contractor's statutorily required performance and payment bond arising directly from the changed Work, and any such premiums for the Changed Work on Subcontractor bonds that have been contractually required by the Owner. The Contractor is not entitled to any increased premium on any retainage bond or any Subcontractor bond not contractually required by the Owner, as such bonds are optional.

Upon request, the Contractor shall provide the Owner with supporting documentation from its insurer or surety of any associated cost incurred.

§ 7.5.5 Subcontractor Costs: These are payments the Contractor makes to Subcontractors for changed Work performed by such Subcontractors. The Subcontractors' cost of changed Work shall be determined in the same manner as prescribed in this Section 7.5.

§ 7.5.6 Fee: This is the allowance for all combined overhead, profit, and other costs, including all office, home office, and site overhead (including facilities, purchasing, clerical, project manager, project engineer, other engineers, project foreman, estimator, superintendent, and their vehicles and assistants), taxes (except for sales tax), employee per diem, subsistence and travel costs, warranty, safety costs, printing and copying, quality control/assurance, purchasing, small or hand tool (a tool that costs $500 or less and is normally furnished by the performing contractor) or expendable charges, preparation of as-built drawings, impact on unchanged Work, Change Order and Claim preparation, and delay and impact costs of any kind (cumulative, ripple, or otherwise). No such costs may be added to the total cost to the Owner of any Change Order, Construction Change Directive, Claim or any other claim of any kind on this Project. No Fee shall be due, however, for direct settlements after Substantial Completion by the Owner of Subcontractor claims. The Fee shall be limited in all cases to the following schedule:

.1 The Contractor shall receive ten percent (10%) of the cost of any materials supplied or Work properly performed by the Contractor's own forces.

.2 The Contractor shall receive six percent (6%) of the amount owed (less fee) directly to a first-tier Subcontractor or first-tier supplier for materials supplied or for Work properly performed by that Subcontractor or supplier.

.3 Each Subcontractor of any tier shall receive ten percent (10%) of the cost of any materials properly supplied or Work performed by its own forces.

.4 Each Subcontractor of any tier shall receive six percent (6%) of the amount (less fee) it properly incurs for materials supplied or Work properly performed by its suppliers or Subcontractors of the next lower tier.

.5 The Contractor and its Subcontractors of any tier shall receive five percent (5%) of any amounts owed to any remote, sub-tier Subcontractors which are within the lines of contractual responsibility but not in privity of contract with such Contractor or Subcontractors, for Work performed by that remote, sub-tier Subcontractor.

.6 The cost to which this Fee is to be applied shall be determined in accordance with Section 7.5.

.7 The total summed Fee of the Contractor and all Subcontractors of any tier shall not exceed twenty-six (26%) of any amounts owed to any remote, lower-tier Subcontractors that are within the lines of contractual responsibility but not in privity of contract with such Contractor or Subcontractor(s), for Work performed by that remote, lower-tier Subcontractor. If the Fee would otherwise exceed twenty-six percent (26%), the Contractor shall proportionately reduce the Fee percentage for the Contractor and all Subcontractors except for the Subcontractor supplying material or performing Work with its own forces. None of the fee percentages authorized in this Section 7.5.6 may be compounded with any other fee percentage or percentages authorized in this Section.

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If a change in the Work involves both additive and deductive items, the appropriate Fee allowed will be added to the net difference of the items. If the net difference is negative, no Fee will be added to the negative figure as a further deduction. If the changed Work is performed by a wholly owned subsidiary or by a company with common ownership interests (i.e., at least 50 percent similar ownership) of the Contractor or any Subcontractor, then only the entity performing the changed Work may receive a Fee per the above schedule and the higher-tier company shall not be entitled to any Fee. The parties acknowledge that the fees listed in this Section 7.5.6 are substantially greater than the fees and overhead normally included in determining the Contract Sum bid; that these higher percentages are a sufficient amount to compensate the Contractor for all effects and impacts of Changes in the Work; and that the resultant overcompensation of the Contractor for some Changes compensates the Contractor for any Changes for which the Contractor believes the percentage is otherwise insufficient.

§ 7.5.7 The cost of any changed Work or of any other increase or decrease in the Contract Sum, including a Claim, shall not include, among other things, consultant costs, attorneys' fees, or Claim preparation expenses. Such matters are not recoverable from the Owner.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established ~~in the Agreement.~~ by the Owner in its Conditional Notice to Proceed, which may not be issued until the Contractor has complied with the terms of the notice of award of the Contract. Work on the Project site may begin when the Contractor complies with the requirements of the Conditional Notice to Proceed. Within ten (10) days of issuance of the Conditional Notice to Proceed, the Contractor shall submit the executed contract, evidence of bondability, certificates of insurance, and all other documents required by the Contract Documents.

§ 8.1.3 The date of Substantial Completion (or a designated portion thereof) is the date set by the Owner and certified by the Architect in accordance with Section 9.8.

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

§ 8.2 Progress and Completion

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

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces, ~~and shall~~ achieve Substantial Completion within the Contract Time, and achieve Final Completion within sixty (60) days thereafter (or such other period of time for specific phases as is specified in the Contract Documents).

§ 8.2.4 THE TIMELY COMPLETION OF THIS PROJECT IS ESSENTIAL TO THE OWNER. The Owner will incur serious and substantial damages if Substantial Completion of the Work does not occur within the Contract Time; however, it would be difficult, if not impossible, to determine the amount of such damages, which could include, for example, personnel and overtime costs, transportation costs, governmental fees, storage costs, portable rental costs, loss of use, and lost opportunities. Consequently, provisions for liquidated damages as a reasonable estimate of loss may be included in the Contract Documents. The Owner's right to liquidated damages is not affected by partial completion, occupancy, or beneficial occupancy. The Contractor shall furnish sufficient forces, construction plant, and equipment, and shall work such hours, including night shifts, overtime operations, and weekend and holiday work, as may be necessary to ensure the completion of the Work in accordance with the date of Substantial Completion and the accepted Contractor's Construction Schedule. If the Contractor fails to perform in a timely manner in accordance with the Contract Documents and, through the fault of the Contractor or Subcontractor(s) of any tier fails to meet the Contractor's Construction Schedule, the Contractor shall take such steps as may be necessary to immediately improve its progress by increasing the number of workers, shifts, overtime

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operations, or days of work (to the extent allowable under local hours of work ordinances) or other means and methods, all without additional cost to the Owner.

§ 8.2.5 If the Work is to be performed in phases, with separate dates set forth for Substantial Completion elsewhere in the Contract Documents, then the specified liquidated damages shall apply separately to each such phase unless otherwise specified.

§ 8.2.6 Any provisions in the Contract for liquidated damages are intended to be in lieu of the liability of the Contractor for special, incidental, and consequential damages (such as cost of capital and loss of profits, use, and revenue) sustained by the Owner but shall not relieve or release the Contractor from liability for any and all damage or damages suffered by the Owner due to other breaches of the Contract or suffered by separate contractors.

§ 8.2.7 It is the Contractor's option, but not its right, to attempt to complete the Project earlier than the dates specified in the Contract Documents. Therefore, any Claim based upon delay shall be evaluated based upon the dates specified in the Contract Documents, not an earlier projected completion that the Contractor may propose.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work only to the extent reflected in approved Change Orders providing for specific extensions of the Contract Time; (3) by unexpected industry-wide labor disputes, fire, seismic event, unusual delay in deliveries, governmental delays (including unanticipated permit delays not caused by the Contractor) (delays caused by a local jurisdictions' scheduled days off shall not be considered an excusable delay), unavoidable casualties, unanticipated, abnormal, and adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the ~~Architect~~ Owner determines, justify delay, then the Contract Time shall be extended ~~for such reasonable time as the Architect may determine.~~ by Change Order for such reasonable time, limited to the change in the actual critical path of the Contractor's Construction Schedule directly caused thereby, as the Owner may determine consistent with the provisions of the Contract Documents. In no event, however, shall the Contractor be entitled to any extension of time absent proof of (1) delay to an activity on the critical path of the Contract Schedule, so as to actually delay the Project completion beyond the date of Substantial Completion, or (2) delay transforming an activity into the critical path of the Contract Schedule, so as to actually delay the Project completion beyond the date of Substantial Completion. For purposes of this Section 8.3.1, labor or material shortages, delays in deliveries, governmental delays, and similar events due to the ongoing COVID-19 global pandemic will be deemed to have been anticipated by Contractor and will not result in an extension of time unless agreed by the Owner in advance in writing in its sole discretion.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15 and shall include any proposed changes in the Contractor's Construction Schedule or the Contract Time, a description of any event that could delay performance or supplying of any item of the Work, the expected duration of the delay, the anticipated effect of the delay on the Contractor's Construction Schedule, and the action being taken to correct the delay situation. That the Owner or the Architect may be aware of the occurrence or existence of a delay through means other than the Contractor's written notification shall not constitute a waiver of a timely or written notice or Claim. The Contractor has an obligation to minimize and mitigate schedule impacts.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

.1 If the delay was not caused by the Owner, the Contractor, a Subcontractor of any tier, or the Architect, or anyone acting on behalf of any of them, the Contractor is not entitled to an increase in the Contract Sum but may be entitled to an increase in the Contract Time. If the delay was caused by the Contractor, a Subcontractor of any tier, or anyone acting on behalf of any of them, the Contractor is not entitled to an increase in the Contract Time or in the Contract Sum. The Contractor shall be entitled to a change in the Contract Sum only if the delay was caused by the Owner or the Architect, or anyone acting on behalf of them. The Contractor shall not recover damages, an equitable adjustment, or an increase in the Contract Sum or Contract Time from the Owner where the Contractor could have reasonably avoided the delay by the exercise of due diligence. The Contractor shall be able to recover an increase in the Contract Sum, provided it is consistent with the terms of the Contract Documents, only if the delay directly impacts the critical path, could not have reasonably

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been avoided, was unreasonable, and was caused by the Owner or anyone acting on its behalf as permitted under the Contract Documents. The Owner is not obligated, directly or indirectly, for damages, an equitable adjustment, or an increase in the Contract Sum for any delay suffered by a Subcontractor of any tier that does not increase the Contract Time.

.2 In the event the Contractor (including any Subcontractors of any tier) is held to be entitled to damages from the Owner for delay beyond the payment permitted in Section 7.5.6, it is agreed that the total combined damages to the Contractor and any Subcontractors of any tier for each day of delay shall not exceed the daily liquidated damage rate specified in the Contract Documents due the Owner for the Contractor's delay in achieving Substantial Completion. By submitting its bid on the Work and executing the Agreement, the Contractor represents that it would be difficult, if not impossible, to determine the amount of any delay damages due it, that it has taken this provision for liquidated damages into consideration in its bid, and that these liquidated damages are a reasonable estimate of its loss. No damages shall be allowed for any time prior to seven (7) days before receipt of written notice of the Claim of the delay pursuant to Article 15.

.3 The Contractor shall not in any event be entitled to damages arising out of actual or alleged loss of efficiency; morale, fatigue, attitude, or labor rhythm; constructive acceleration; home office overhead; expectant underrun; trade stacking; reassignment of workers; rescheduling of work; schedule compression; concurrent operations; dilution of supervision; learning curve; beneficial or joint occupancy; logistics; ripple; season change; extended or expanded overhead or general conditions; profit upon damages for delay; impact damages; cumulative impacts; or similar damages. Any effect that such alleged costs may have upon the Contractor or its Subcontractors of any tier is fully compensated through the percentage Fee on Change Orders paid through Section 7.5.6.

.4 The Contractor shall not be entitled to any adjustment in the Contract Time or the Contract Sum, or to any additional payment of any sort, by reason of the loss or the use of any float time, including time not on the critical path or time between the Contractor's anticipated completion date and the end of the Contract Time, whether or not the float time is described as such on the Contractor's Construction Schedule.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed (i.e., more than fifty (50) percent) so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices, but not the Contract Time or any other portion of the Contract Sum, shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect at least fourteen (14) days before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Owner or Architect. At a minimum, the Work shall be itemized by Specification section or system; separate values for labor, materials, and equipment shall be provided; and line items on the schedule of values shall be tied to the Contractor's schedule. Quantities shall be provided for each section or system of the Work. The Contractor shall itemize and prepare the schedule of values for approval by the Owner with respect to form, content, and level of detail. This schedule, unless objected to by the Owner or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Owner and Architect and supported by such data to substantiate its accuracy as the Owner or Architect may require, and unless objected to by the Owner or Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

.1 Mobilization costs shall be a maximum of one-half of one percent (0.5%) of the Contract Sum, and shall be paid only if supported by an itemized breakdown of costs acceptable to the Owner.

.2 Payment applicable to the expenses of Contractor's bond and/or any contractually required builder's risk insurance will be made only upon receipt of paid invoices from surety and/or insurance carrier.

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.3 No payment will be made for shop drawings or submittals until on-site receipt of materials, except for structural steel, fire sprinkler, automatic temperature control, and fire alarm shop drawings that have been reviewed and accepted by the Architect.

.4 The schedule of values shall allocate at least one percent (1%) of the Contract Sum to Commissioning, as defined in the Contract Documents.

.5 The schedule of values shall also allocate at least two percent (2%) of the initial Contract Sum as a separate line item for that portion of the Work between Substantial Completion and Final Completion to be entitled "Final Documentation and Punch list Completion," which shall include, without limitation, punch list completion and furnishing all deliverables, which will be earned and distributed as follows: half shall be allocated for the completion of the punch list work; one-quarter shall be allocated for completion of approved operations and maintenance data as defined in the Contract Documents; and one-quarter shall be allocated for completion of approved record documents, warranties and bonds, delivery of extra stock, and all other documentation or items of the Work required for Final Completion and final payment. This percentage is not the statutory retainage described in Section 9.3.4 or any other retainage, but rather requires the Contractor to recognize that the Contractor and its Subcontractors will expend significant costs in advancing the Work from Substantial Completion to Final Completion, and that this amount is not earned until Final Completion of the Work is accomplished. At its sole discretion, the Owner may release portions of these amounts progressively as items are completed.

.6 The Contractor shall itemize separately line-item costs for permits, bonds, insurance, layout and supervision, scheduling, and temporary facilities.

§ 9.3 Applications for Payment

§ 9.3.1 ~~At least ten days before the date established for each progress payment, the~~ Progress payments will be made monthly for Work duly certified, approved, and performed during the calendar month preceding the application. These amounts are paid in trust to the Contractor for distribution to Subcontractors to the extent and in accordance with the approved Application for Payment. The Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values~~, if required under Section 9.2,~~ for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, shall meet the requirements of this Article 9, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 ~~As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.~~ **Draft Application:** At the last scheduled weekly on-site Project status meeting of each month, the Contractor shall submit to the Owner the reports required by the Contract Documents and a draft, itemized application for payment for Work performed during that calendar month on a form supplied or approved by the Owner. This shall not constitute a payment request. The Contractor, the Owner, and the Architect shall confer prior to the last working day of the month regarding the current progress of the Work and the amount of payment to which the Contractor is entitled. The Architect or Owner may request the Contractor to provide data substantiating the Contractor's right to payment as the Architect or the Owner may require, such as copies of invoices from Subcontractors of any tier, lien releases, and approved payrolls, and reflecting retainage as provided elsewhere in the Contract Documents. The Contractor shall not be entitled to make a payment request, nor is any payment due the Contractor, until such data is furnished.

§ 9.3.1.2 Payment Request: After the Contractor, the Owner, and the Architect have met and conferred regarding the updated draft Applications for Payment, and the Contractor has furnished all progress information required and all data requested by the Owner or the Architect, the Contractor may submit a payment request by the last working day of the month following the meeting in the agreed-upon amount, in the form of a notarized, itemized Application for Payment for Work properly performed during that calendar month on a form supplied or approved by the Owner, along with a lien release on a form furnished by the Owner from each Subcontractor for whose Work the Owner paid the Contractor for the prior month. The Applications shall also state that prevailing wages have been paid in accordance with the pre-filed statements of intent to pay prevailing wages on file with the Owner and that all payments due Subcontractors of any tier from the Owner's payment the prior month have been made. The submission of this Application constitutes a certification that the Work is current on the Contractor's Construction Schedule, unless otherwise noted on the application. If required by the Owner, the Contractor shall submit proof of payment to Subcontractors for prior months, such as lien releases or cancelled checks. Applications for Payment

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shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay. A payment request shall not be valid unless it complies with the requirements of the Contract Documents.

§ 9.3.1.3 Disputed Amounts: If the Contractor believes it is entitled to payment for Work performed in addition to the agreed-upon amount, the Contractor may, also by the last working day of that month and after the meeting described in Section 9.3.1.1, submit to the Owner and the Architect along with the approved Application for Payment a separate written payment request specifying the exact additional amount due, the category in the schedule of values in which the payment is due, the specific Work for which the additional amount is due, and why the additional payment is due. Furthermore, for the submittal to be considered, pursuant to WAC 296-127-320, the Contractor and all Subcontractors shall file with the Owner by the same date certified copies of all payroll records relating to the additional amount sought.

§ 9.3.1.4 Validity of Payment Requests: A payment request shall not be valid unless it complies with the requirements of the Contract Documents. If a separate payment request concerning a disputed amount does not comply with the requirements of the Contract Documents, the Owner will provide a written statement to the Contractor stating why the disputed amount is not owed and/or why the separate payment request does not comply with the requirements of the Contract Documents.

§ 9.3.1.5 Payments to Subcontractors: No payment request shall include amounts the Contractor does not intend to pay to a Subcontractor because of a dispute or other reason. If, after making a request for payment but before paying a Subcontractor for its performance covered by the payment request, the Contractor discovers that part or all of the payment otherwise due to the Subcontractor is subject to withholding from the Subcontractor under the subcontract (such as for unsatisfactory performance or non-payment of Sub-subcontractors), the Contractor may withhold the amount as allowed under the subcontract, but it shall give the Subcontractor, the Owner, and the Architect written notice of the remedial actions that must be taken as soon as practicable after determining the cause for the withholding but before the due date for the Subcontractor payment, and pay the Subcontractor within eight (8) working days after the Subcontractor satisfactorily completes the remedial action identified in the notice.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of Project-specific materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner in writing, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.3.4 Retainage

§ 9.3.4.1 Notwithstanding any other provision of this Contract, and in accordance with chapters 39.08 and 60.28 RCW, the Owner will retain from the monies earned by the Contractor hereunder five (5) percent as a trust fund for the protection and payment of any person or persons, mechanic, subcontractor, or materialman who will perform any labor or furnish any supplies related to the Project and the State with respect to taxes imposed pursuant to titles 50, 51, and 82 RCW which may be due from Contractor. Said retainage will be reserved in an Owner fund until sixty (60) days following Final Acceptance of the Project as completed and will not be released to Contractor until the Owner has received certification from the Washington State Department of Revenue that all taxes, increases, and penalties due from Contractor, and all taxes due and to become due with respect to the Project, have been paid in full or are readily collectible without recourse to the State's lien on the retainage, and until the requirements of the Contract Documents have been satisfied. Chapters 39.08 and 60.28 RCW, concerning the rights and responsibilities of Contractor and Owner with regard to the performance and payment bonds and retainage, are made a part of the

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Contract Documents by reference as though fully set forth herein. A sum equal to five percent (5%) of each approved Application for Payment shall be retained.

§ 9.3.4.2 After award of the Contract or Work for which retained percentages are required to be reserved under the provision of Chapter 60.28 RCW, the Owner shall require the Contractor to exercise, in writing, one of the options listed below:

.1 Retained percentages will be retained in a fund by the Owner not subject to release until sixty (60) days following the Final Acceptance of the Work as completed and as provided in Section 9.10.6; or

.2 Deposited by the Owner in an interest-bearing account in a bank, mutual savings bank, or savings and loan association and not subject to release until sixty (60) days following Final Acceptance of the Work as completed and as provided in Section 9.10.6; or

.3 Placed in escrow with a bank or trust company and not subject to release until sixty (60) days following the Final Acceptance of the Work as completed and as provided in Section 9.10.6.

§ 9.3.4.3 If the Contractor provides a bond in place of retainage, it shall be in an amount equal to five percent (5%) of the Contract Sum plus change orders. The minimum requirements for the bond are that it must be on a form acceptable to the Owner, with an A.M. Best rating of "A-" or better and a financial rating of no less than "VII," and signed by a surety registered by the Washington State Insurance Commissioner and on the currently authorized insurance list published by the Washington State Insurance Commissioner.

§ 9.3.4.4 The Contractor or a Subcontractor may withhold payment of not more than five percent (5%) as retainage from the monies earned by any Subcontractor or Sub-subcontractor, per Chapter 60.28 RCW, provided that the Contractor pays interest to the Subcontractor at the same interest rate it receives from its reserved funds. If requested by the Owner, the Contractor shall specify the amount of retainage and interest due a Subcontractor.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's approved Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial and Final Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Owner may, with or without the Architect's concurrence, withhold payment, and the Architect may also withhold a Certificate for Payment or, because of subsequent observations or subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to

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such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;

.2 third-party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials, or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a Separate Contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; ~~or~~

.7 ~~repeated~~ unsatisfactory prosecution of the Work by the Contractor, including, but not limited to, failure to carry out the Work in accordance with the Contract Documents~~.~~;

.8 delay by the Contractor and/or its Subcontractor(s) of any tier, or failure to comply with the Contractor's Construction Schedule requirements;

.9 failure to submit affidavits pertaining to wages paid as required by statute;

.10 failure to submit a properly updated Construction Schedule;

.11 failure to comply with a requirement of the Contract Documents in which the Owner has reserved the right to withhold payment;

.12 liquidated damages;

.13 failure to properly maintain and submit as-builts;

.14 failure to properly submit daily construction records;

.15 failure to properly submit certified payrolls; or

.16 failure to properly submit any other documents required of the Contractor under the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 ~~If the Architect withholds certification for payment under Section 9.5.1.3, the~~ Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.5.5 Without limiting Contractor's obligations under Section 3.4.5, pursuant to Chapter 39.12 RCW ("Prevailing Wages on Public Works"), the Contractor shall not receive any payment until the Contractor and all Subcontractors of any tier for whom payment is sought have submitted state-approved "Statements of Intent to Pay Prevailing Wage" to the Owner. The statement must have the approval of the Industrial Statistician of the Department of Labor and Industries before it is submitted to the Owner. The statement must include the Contractor's registration number, the number of workers in each trade classification, and the applicable wage rate for each trade listed. The Contractor agrees to provide each Subcontractor of any tier with a schedule of applicable prevailing wage rates. The Contractor and the respective Subcontractors of any tier shall pay all fees required by the Department of Labor and Industries, including fees for the approval of the "Statement of Intent to Pay Prevailing Wages." Approved copies of the "Statement of Intent to Pay Prevailing Wages" must be posted where workers can easily read them.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, and said Certificate for Payment has been approved by the Owner, the Owner shall make payment in the manner and within the time provided in the Contract Documents~~, and shall so notify the Architect~~. The Owner will make a progress payment within thirty (30) days of its receipt and approval of the Architect's Certificate for Payment; any payments made by or through the Office of the Superintendent of Public Instruction (OSPI) shall be made in accordance with the policies, procedures, and forms required by OSPI. The Owner shall be entitled to withhold payment to the extent provided by the Contract Documents, notwithstanding the issuance of a Certificate for Payment.

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§ 9.6.2 The Contractor shall pay each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner. If the Contractor does not receive payment for any cause that is not the fault of a particular Subcontractor but does receive payment for materials supplied or Work performed by that Subcontractor, the Contractor shall pay that Subcontractor in accordance with its subcontract for its satisfactorily completed Work, less the retained percentage.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor, satisfactory to the Owner, that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. ~~If the Contractor fails to furnish such evidence within seven days, the~~The Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3, and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work ~~not in accordance with the Contract Documents~~.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage, or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. ~~Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor.~~ If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property or retainage against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect ~~does not~~ improperly fails to issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's timely, complete, and approved Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount ~~certified by the Architect or awarded by binding dispute resolution,~~ due and owing to the Contractor, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. This right to stop Work does not apply in the case of the failure to issue a Certificate of Payment for amounts in dispute. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up as provided for in Section 7.5 of these General Conditions, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof designated and approved by the Owner is sufficiently complete in accordance with the Contract Documents so that the Owner can fully occupy or utilize the Work or the designated portion thereof for its intended use, including furniture, fixtures, and equipment and student, teacher, and staff occupancy (if applicable). The fact that the Owner

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may occupy the Work or a designated portion thereof does not indicate that the Work is acceptable in whole or in part. All Work other than incidental corrective or punch list Work and final cleaning shall be completed, including but not limited to the following:

.1 Obtain applicable occupancy permits, including any fire/life safety systems and health department approval, pressure vessel permits, elevator permits, and similar approvals or certificates by governing authorities and franchised services, assuring the Owner's full access and use of completed Work.

.2 Submit the Contractor's punch list of items to be completed or corrected and written request for inspection.

.3 Complete final start-up, testing, and commence instruction and training sessions on all major building systems including HVAC and controls, intercom, data communications, fire alarm, telephone, fire sprinkler, security, clocks, plumbing, septic system, and establish a Date of Commissioning.

.4 Make final changeover of locks and transmit new keys to the Owner, and advise the Owner of the changeover in security provisions.

.5 Discontinue or change over and remove unnecessary temporary facilities and services from the Project site.

.6 Advise the Owner on coordination of shifting insurance coverages, including proof of extended coverages as required.

.7 Complete final cleaning.

The Work is not Substantially Complete unless the Architect reasonably judges that the Work can achieve Final Completion within thirty (30) days (or such other period of time as is specified in the Contract Documents), appropriate cleaning has occurred, all designated systems and parts are commissioned and usable, including balancing of the HVAC system, utilities are connected and operating normally and training sessions have occurred, all required temporary-occupancy permits, pressure vessel permits, elevator permits, and similar approvals or certificates by governing authorities and franchised services, assuring the Owner's full access to the Work have been issued, O&M manuals have been submitted for review, and the Work is accessible by normal vehicular and pedestrian traffic routes. The fact that the Owner may occupy the Work or a designated portion thereof does not indicate that the Work is Substantially Complete or is acceptable in whole or in part, nor does such occupation toll or change any liquidated damages due the Owner.

§ 9.8.1.1 Date of Commissioning of Selected Equipment and Systems. The equipment and systems designated in the Contract Documents as requiring commissioning are considered "Selected Equipment and Systems." When the Contractor considers that all Selected Equipment and Systems are complete, fully functional, ready for normal operation and functional performance testing, and all pre-commissioning checklists are completed, the Contractor shall so notify the Architect in writing a minimum of forty (40) days prior to the Date of Substantial Completion (or such other date as may be established in the Contract Documents). A reasonable period shall be allowed for the Architect and commissioning agent, if applicable, to schedule and observe the functional performance tests identified in the Contract Documents. If the inspection discloses that the Selected Equipment and Systems are not Substantially Complete or that any item is not in accordance with the requirements of the Contract Documents, the Contractor shall expeditiously, and before the Date of Commissioning, complete or correct such item upon notification by the Architect or commissioning agent. The Contractor shall then submit a request for another inspection to determine completion of those Selected Equipment and Systems and pay the costs associated with the re-inspection, including fees of the Architect, commissioning agent, and their consultants. When all the Selected Equipment and Systems are complete, the Owner's commissioning agent will notify the Owner in writing, which shall establish the Date of Commissioning. Training of Owner personnel shall begin immediately after the Date of Commissioning and shall be conducted by appropriate Subcontractor personnel on site who are knowledgeable with the construction and operation of each system prior to departure of the installing entity from the site. Warranties on any Selected Equipment and Systems required by the Contract Documents shall commence on the Date of Substantial Completion, unless otherwise provided, but the Contractor shall retain the responsibility to maintain the system until Final Completion. The Contractor will achieve the Date of Commissioning at least thirty (30) days prior to the Date of Substantial Completion fixed by the Contract Documents.

§ 9.8.1.2 Indemnification. The Contractor shall defend, indemnify, and hold harmless the Owner and the Architect and their agents, employees, and consultants, successors, and assigns from and against all claims, damages, losses, and expenses of third parties, direct and indirect, or consequential, including costs, design professional fees, and attorneys' fees incurred by the Owner related to such claims and in proving the right to indemnification, arising out

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of or resulting from the failure of the Contractor to attain the Date of Commissioning at least thirty (30) days prior to the Date of Substantial Completion fixed by the Contract Documents.

§ 9.8.1.3 Beginning ninety (90) days before the scheduled date of Substantial Completion, the Contractor shall prepare reports weekly, identifying items to be completed in order to obtain required certificates of occupancy and make recommendations to the Owner with respect to effectuating the earliest possible completion. The Contractor shall include this report as a schedule item on its CPM schedule.

§ 9.8.1.4 The Contractor acknowledges that a 30-day period after the Date of Commissioning and prior to occupancy is specified during which all HVAC, mechanical, electrical, control, and environmental management systems are fully operational under procedures and loads intended to provide unoccupied space with positive performance for pre-occupancy environmental documentation, and the systems are scheduled to operate under a procedure intended to dissipate out-gassing that may occur from interior and other materials.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner and the Architect a comprehensive list of items to be completed or corrected prior to final payment. The Contractor shall proceed promptly to complete and correct items on the list. The Contractor shall immediately clean-up any dust or debris created through punch list Work activities. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, and upon verification by the Architect that all permits, approvals, testing, training, and other submittals and administrative actions required under the Contract Documents for obtaining Substantial Completion have been satisfied, the Architect and, at its option, the Owner will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. If the Owner or Architect determines that the Work or designated portion is not substantially complete, the Contractor shall expeditiously complete the Work or designated portion, and again request an inspection. The Contractor shall pay the costs associated with this third inspection and any further inspections.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that upon approval shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion, except that warranties for Select Equipment and Systems shall commence with acceptance of the Commissioning Report by the Owner's Board of Directors. The Contractor shall attach and submit with the executed Certificate of Substantial Completion the Certificate of Occupancy, as well as a written list of each outstanding and unresolved Claim. Any Claim not so submitted and identified, other than retainage and the undisputed balance of the Contract Sum, shall be deemed waived and abandoned. If the Owner or Architect determines that the Work or designated portion is not Substantially Complete, the Contractor shall expeditiously complete the Work or designated portion, again request an inspection, and pay the costs associated with the re-inspection, including Architect and consultant fees.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. ~~Upon such acceptance,~~ Any items not included by the Architect but required or necessary for Final Completion of the Contract shall be supplied and installed by the Contractor as a part of the Contract Sum, notwithstanding their not being recorded by the Architect. Upon such written acceptance of the Certificate of Substantial Completion by the Owner and the Contractor, and upon the Contractor's Application for Payment, and consent of surety if any, the Owner shall make payment ~~of retainage applying to the Work or designated portion thereof.~~ as provided in the Contract Documents. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents. No further payment will be due or owing until the payment following Final Completion.

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§ 9.8.6 The Contractor shall prepare, continue to monitor with the Architect, and cause to be completed, all punch lists with respect to the activity of each Subcontractor and report weekly to the Owner on all outstanding uncompleted items.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may, upon written notice to the Contractor, take possession of, operate, occupy, or use any completed or partially completed portion of the Work at any ~~stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project.~~ stage. Such partial occupancy or use may commence whether or not the portion is substantially ~~complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents.~~complete. Unless otherwise agreed in writing, such possession, use, or operation shall not be deemed an acceptance of any portion of the Work, nor accelerate the time for any payment to the Contractor under the Contract, nor prejudice any rights of the Owner under the Contract or under any insurance, bond, guaranty, or other requirement of the Contract, nor relieve the Contractor of the risk of loss or any of its obligations under the Contract, nor establish a Date of Substantial or Final Completion, nor establish a date for termination or partial termination of the running of liquidated damages, nor constitute a waiver of any Owner claims. If the Contractor fails to achieve Substantial Completion of the Work or designated portion thereof within the Contract Time, or fails to achieve Final Completion of the Work within sixty (60) days of Substantial Completion (or such other period of time as is specified in the Contract Documents), the Owner may take possession of, use, or operate all or any part of the Work without an increase in the Contract Sum or the Contract Time on account of such possession or use. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. ~~The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.~~

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

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

§ 9.10 Final Completion and Final Payment

§ 9.10.1 The Contractor shall cause punch list items to be completed within sixty (60) days of Substantial Completion of each phase (or such other period of time as is specified in the Contract Documents) or within such reasonable period as may be required to correct the item (in the event that the punch list items are, because of their nature, incapable of correction during that period), provided that the Contractor commences to correct the item within that period and thereafter diligently and in good faith pursues the corrective action to completion. If, at forty-five (45) days after the Date of Substantial Completion, the Owner considers that the punch list items are unlikely to be completed within the next fifteen (15) days of the Date of Substantial Completion of each phase (or such other period of time as is specified in the Contract Documents), the Owner may, upon seven (7) days' written notice to the Contractor, take over and perform some or all of the punch list items. If the Contractor fails to make reasonable progress towards the correction of the deficiencies within this seven (7) day period, the Owner may deduct the actual cost of performing this punch list Work, including any design costs, plus fifteen percent (15%) to account for the Owner's transaction costs, from the Contract Sum. Upon receipt of the Contractor's notice that the Work is ready for final inspection and ~~acceptance and upon receipt of a final Application for Payment,~~ acceptance, the Architect will promptly make such ~~inspection. When the Architect finds~~ inspection accompanied by the Contractor (if requested by the Architect or Owner). If the Architect or Owner determines that some or all of the punch list items are not accomplished, the Contractor shall be responsible to the Owner for all costs, including re-inspection fees, for any subsequent Architect's inspection to determine compliance with the punch list. When the Architect finds all punch list items complete and the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly ~~issue a final Certificate for Payment~~ notify the Owner and the Contractor in writing stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents~~ and that the entire~~

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~~balance found to be due the Contractor and noted in the final Certificate is due and payable~~. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.1.1 The Contractor is liable for, and the Owner may deduct from any amounts due the Contractor, all Architect, engineer, or other design consultant fees and all Commissioning Agent and project manager fees incurred by the Owner for services performed more than sixty (60) days after Substantial Completion of all the Work (or such other period of time as is specified in the Contract Documents), whether or not those services would have been performed prior to that date had Final Completion been achieved in a timely manner.

§ 9.10.1.2 When the Architect finds that the Work has been concluded, a final occupancy permit has been issued, any commissioning process and validation process have been successfully concluded, the Commissioning Report has been accepted by the Owner's Board of Directors, and the Contractor has submitted all the items identified in Section 9.10.1.3 to the Architect, the Contractor may submit a final Application for Payment. The Architect will then promptly issue a final Certificate for Payment stating that the entire balance found to be due the Contractor and noted in said final Certificate is due and payable. The Architect's final Certificate for Payment shall establish the date of Final Completion upon its execution by the Owner.

§ 9.10.1.3 "Final Completion" will be attained when the Contractor has accomplished the following:

- **.1** Completed all requirements listed in Section 9.8 for Substantial Completion.
- **.2** Completed all remaining punch list items and remaining Work, and obtain approval by Architect and Owner that all Work is complete.
- **.3** Obtained permanent occupancy permits (if only a temporary occupancy permit was issued at Substantial Completion).
- **.4** Submitted final Change Order, if any, and final Application for Payment.
- **.5** Submitted Project record documents and as-built drawings and specifications, any final property survey, and paper and electronic operation and maintenance manuals required by the Contract Documents.
- **.6** Delivered tools, spare parts, extra stock of material, and similar physical items to the Owner as required by the Contract Documents.
- **.7** Completed final cleaning after punch list Work (in addition to the final cleaning that was required to obtain Substantial Completion).
- **.8** Completed instruction and training sessions on all major building systems including HVAC, intercom, data communications, fire alarm, telephone, fire sprinkler, emergency power, plumbing, , septic system, security, and clocks.
- **.9** Submitted executed warranties, as well as guarantees and bonds.
- **.10** Discontinued or changed over and removed temporary facilities and services from the Project site.
- **.11** Advised the Owner on coordination of shifting insurance coverages, including proof of extended coverages as required.
- **.12** Acceptance of the final Commissioning Report by the Owner.
- **.13** All copies of Instruments of Service, except the Contractor's record set, have been returned to the Owner or are suitably accounted for by the Owner.
- **.14** Submitted keys and keying schedule.
- **.15** Submitted spare parts and maintenance materials, to the extent required by the Contract Documents.

§ 9.10.2 Neither final payment nor any ~~remaining~~ retained percentage shall become due until ~~the Contractor submits to~~ after the Owner's Board of Directors has formally accepted the Project ("Final Acceptance"). To achieve Final Acceptance, the Architect must have issued a final Certificate for Payment under Section 9.10.1.2, an occupancy permit must have been issued, Final Completion must have occurred, and the Contractor must have submitted to the Owner and the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, except for any claims that are specifically identified on the affidavit ("Affidavit of Payment of Debts and Claims," AIA Form G706 or equivalent), (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any and all special warranties, such as manufacturers' warranties or specific Subcontractor

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warranties, ~~and~~ (6) ~~if required by the Owner,~~ other data establishing payment or satisfaction of or protection against obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated ~~by the Owner.~~ by the Owner ("Contractor's Affidavit of Release of Liens," AIA Form G707 or equivalent), (7) pursuant to RCW 39.12.040, "Affidavit of Wages Paid" has been received from the Contractor and from each Subcontractor of any tier certified by the Industrial Statistician of the Washington State Department of Labor and Industries, with the fees paid by the Contractor or Subcontractor, (8) a letter from the Architect indicating that the Work is complete and recommending Final Acceptance of the Project by the Owner, (9) certification that the materials in the Work are "lead-free" and "asbestos-free," (10) a certified statement that the Contractor has closed all necessary permits or otherwise met the requirements of all governing jurisdictions related to the Project, including but not limited to all city or county departments, health districts, and utility districts, and provided to Owner with a copy of all closed or signed off permits, (11) record documents, (12) all guarantees, training, manuals, operation instructions, certificates, spare parts, maintenance manuals and stock, specified excess material, as-built drawings, and other documents, training, or items required by the Contract Documents or local governmental entities, and (13) all submittals and information sufficient for the Owner to submit apprenticeship utilization data as required by Chapter 39.04 RCW. Pursuant to Chapter 60.28 RCW ("Lien for Labor, Materials, Taxes on Public Works)" completion of the Contract Work shall occur upon Final Acceptance. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, ~~final completion thereof~~ Final Completion is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting ~~final completion,~~Final Completion, and the Architect so confirms, the Owner ~~shall,~~ may upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. ~~If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.~~

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, statutory retainage, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled ~~at the time of final Application for Payment.~~ and attached to the Contractor's final Application for Payment.

§ 9.10.6 Release of Retainage: The retainage will be held and applied by the Owner as a trust fund in a manner required by Chapter 60.28 RCW. Release of the retainage will be processed in ordinary course of business upon the expiration of sixty (60) days following Final Acceptance of the Work by the Owner, provided that no notice of lien shall have been given as provided in Chapter 60.28 RCW, that no claims have been brought to the attention of the Owner, and that the Owner has no claims under this Contract; and provided further that, for state-funded projects, release of retention has been duly authorized by the State of Washington. The following items must also be obtained prior to release of retainage: pursuant to Chapter 60.28 RCW, a certificate from the Department of Revenue; pursuant to Chapter 50.24 RCW, a certificate from the Department of Employment Security; and appropriate information from the Department of Labor and Industries.

§ 9.10.7 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. Reservations of rights will be deemed waived and are void unless the reserved rights are specifically described in detail to the satisfaction of the Owner and are initialed by the Owner.

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§ 9.10.8 If a Subcontractor of any tier refuses to furnish a release or waiver required by the Owner, the Owner may (1) retain in the fund, account, or escrow funds in 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 one-hundred-fifty percent (150%) of the claimed amount, or (2) accept a bond from the Contractor, satisfactory to the Owner, to indemnify the Owner against such lien. If any such lien remains unsatisfied after all payments from the retainage are made, the Contractor shall refund to the Owner all moneys that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.9 The Contractor and all Subcontractors of any tier shall maintain books, ledgers, records, documents, estimates, bids, correspondence, logs, schedules, emails, facsimiles, and other tangible and electronic data and other evidence relating or pertaining to the costs and/or performance of the Contract ("records") to such extent and in such detail as will properly reflect and fully support compliance with the requirements of the Contract Documents and with all costs, charges, and other amounts of whatever nature. The Contractor shall preserve such records for a period of three (3) years following the date of Final Acceptance under the Contract and for such longer period as may be required by any other provision of the Contract. Within seven (7) days of the Owner's request, the Contractor agrees to make available at the office of the Contractor during normal business hours all records for inspection, audit, and reproduction (including electronic reproduction) by the Owner or its representatives. These requirements shall also be applicable to each Subcontractor of any tier and included in each Subcontract and purchase order issued with respect to the Work, except fixed-price Subcontracts where the price is $25,000 or less. Failure to fully comply with any requirements of this Section shall constitute a material breach of contract and shall constitute a waiver of all claims by the Contractor and any Subcontractor that does not fully comply.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 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. Any review by the Owner, Owner's project manager, Owner's Representative, or the Architect of the Contractor's performance shall not be construed to include a review of the adequacy of the Contractor's safety measures in, on, or near the site of the Work. No action or inaction of the Architect, Owner's project manager, Owner's Representative, or Owner relating to safety, property protection, any element of the Contractor's Safety Manual or related performance, or violation thereof shall in any way:

.1 relieve the Contractor of sole and complete responsibility for the violation and the correction thereof, or of sole liability for the consequences of said violation;

.2 impose any obligation upon the Owner, Owner's project manager, or Architect to inspect or review the Contractor's safety program or precautions or to enforce the Contractor's compliance with the requirements of this Article 10;

.3 impose any continuing obligation upon the Owner, Owner's project manager, or Architect to ensure the Contractor performs the Work safely or to provide such notice to the Contractor or any other person or entity;

.4 affect the Contractor's sole and complete responsibility for performing the Work safely or the Contractor's responsibility for the safety and welfare of its employees and the employees of Subcontractors of any tier; or

.5 affect the Contractor's responsibility for the protection of property, students, staff and the general public.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on or involved in the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

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.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by, applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss. The Contractor shall comply with all notices and requests from the Owner regarding the safety and protection of the Owner's students and staff. The Contractor shall comply with the safety regulations set forth in "Safety Standards for Construction," "General Safety and Health Standards," and any other requirements published by the Washington State Department of Labor and Industries. The Contractor shall comply with the Federal Occupational Safety and Health Act of 1970 (OSHA), including all revisions, amendments, and regulations issued thereunder, and the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA), including all revisions, amendments, and regulations issued thereunder by the Washington State Department of Labor and Industries. The WISHA regulations shall apply to all excavation, trenching, and ditching operations. In case of conflict between any such requirements, the more stringent applicable regulation or requirement shall apply.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards. The Contractor shall maintain at the work site office or other well-known place at the work site all materials (e.g., a first aid kit) necessary for giving first aid to the injured, and shall establish, publish, and make known to all employees procedures for ensuring immediate removal to a hospital or a doctor's care, persons, including employees, who may have been injured on the site. Employees shall not be permitted to work on the site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care. The Contractor and/or any Subcontractors shall ensure that at least one of such employees has a valid, effective first aid card.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work and explicitly permitted by the Contract Documents, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter. This Section does not apply to Claims or damages for additional costs, time, acceleration, or delay.

§ 10.2.9 At all times until the Owner's occupancy of the Work or a designated portion of the Work, the Contractor shall protect from damage, weather, deterioration, theft, vandalism, and malicious mischief and shall bear the risk of

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any uninsured loss or destruction of, or injury or damage to, all materials, equipment, tools, and other items incorporated or to be incorporated in the Work or designated portion thereof, or consumed or used in the performance of the Work or designated portion thereof, and all Work in process and completed Work or designated portion thereof. The Contractor is solely responsible for any deductible amounts related to any insurance coverage.

§ 10.2.10 Any notice given to the Contractor by the Owner or the Architect of a safety or property protection violation will not: (1) relieve the Contractor of sole and complete responsibility for the violation and the correction thereof, or for sole liability for the consequences of said violation; (2) impose any obligation upon the Owner or Architect to inspect or review the Contractor's safety program or precautions or to enforce the Contractor's compliance with the requirements of this Article 10; or (3) impose any continuing obligation upon the Owner or Architect to provide such notice to the Contractor or any other persons or entity.

§ 10.2.11 Without limiting the foregoing, the Contractor will prepare and carry out a COVID-19 safety plan for completion of the Work ("Safety Plan.") The Safety Plan will be consistent with the then-current orders and guidance of the U.S. Centers for Disease Control and Prevention, Washington State Department of Health, Cowlitz County public health officials, and other federal, state, and local government authorities with jurisdiction. The Safety Plan will provide for implementation of protective measures to mitigate the spread of SARS-CoV-2 among and between the workers of the Contractor, Subcontractors of any tier, the District's personnel, and members of the public who may be present at the Project site. At a minimum, the Safety Plan will require workers on the Project to practice adequate social distancing, use appropriate personal protective equipment, not report to work when sick or experiencing symptoms of COVID-19, and promptly report diagnosis with COVID-19 to the Contractor. No later than the first day that the Work commences at the Project site, the Contractor will post a copy of the Safety Plan at the site where other safety notices are made available to workers and will distribute a paper and/or electronic copy of the Safety Plan to the District, each worker, and each Subcontractor of any tier (including updated copies if any subsequent amendments are made). Until the date of Final Completion, the Contractor will periodically update the Safety Plan as orders and guidance of government authorities with jurisdiction change. Should the Contractor have reasonable cause to believe that any worker of the Contractor or a Subcontractor of any tier who has worked at the Project site has COVID-19, the Contractor will immediately (1) exclude that worker from the Project site and (2) inform the District.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a hazardous material or substance, as defined by the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 *et seq.*, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition. The Contractor shall proceed with the Work in areas not affected.

§ 10.3.2 Upon receipt of the Contractor's notice, and with the Owner's agreement, the Owner shall obtain the services of a licensed laboratory to reasonably verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to ~~cause it to be~~ verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection, but the Owner shall not be responsible for any delay resulting from the Contractor's objection to such person or entity. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time ~~shall~~ may be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's demonstrated and reasonable additional costs of shutdown, delay, and ~~start-up.~~ start-up, which adjustments shall be made as provided in Articles 7, 8, and 15.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against

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claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity or if the removal of such material or substance was a part of the Contractor's Work.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances. The Contractor shall store all hazardous materials safely, whether or not required by Contract Documents. The Contractor shall not install hazardous materials, including, without limitation, asbestos, lead, mercury, or polychlorinated biphenyl (PCB), on the Project site.

§ 10.3.5 The Contractor shall indemnify and reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without fault or negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

§ 10.5 Public Safety and Convenience

§ 10.5.1 The Contractor shall conduct its Work so as to ensure the least possible obstruction to vehicular traffic and inconvenience to the general public and others in the vicinity of the Work and to ensure the protection of persons, property, and natural resources. No road or street shall be closed to the public except with the permission of the Owner and the proper governmental authority. Fire hydrants on or adjacent to the Work shall be accessible to firefighting equipment at all times. Temporary provisions shall be made by the Contractor to ensure the use of sidewalks, fire lanes, and private and public driveways and proper functioning of gutters, sewer inlets, drainage ditches and culverts, irrigation ditches, and natural water courses, if any, on the Work site.

§ 10.6 Weather Protection

Temporary weather protection of the Work is the responsibility of the Contractor as necessary to proceed in accordance with the Contractor's approved schedule and environmental conditions. Weather protection shall include, but not be limited to, protection of soils, subgrade preparation, exterior concrete, masonry, sealant, gypsum sheathing, roofing, and interior finishes. Delays and costs resulting from the Contractor's failure to protect the Work from damage due to weather are the sole responsibility of the Contractor.

§ 10.7 Treatment of Assets

§ 10.7.1 Title to all property furnished by the Owner will remain in the name of the Owner. The Owner will become the owner of any improvements completed by the Contractor as part of the Project in addition to any work product and other documents, if any, prepared by the Contractor pursuant to this Contract, unless otherwise provided herein.

§ 10.7.2 Any property of the Owner furnished to the Contractor will, unless otherwise provided herein or approved by the Owner, be used only for the performance of this Contract.

§ 10.7.3 The Contractor will be responsible for any loss or damage to property of the Owner that results from the negligence of the Contractor or from the failure on the part of the Contractor to maintain and administer that property in accordance with sound management practices.

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§ 10.7.4 If any Owner property is lost, destroyed, or damaged, the Contractor will immediately notify the Owner and will take all reasonable steps to protect the property from further damage, in addition to fulfilling the other applicable requirements of the Contract Documents.

§ 10.7.5 The Contractor will surrender to the Owner all property of the Owner upon completion, termination, or cancellation of this Contract.

§ 10.7.6 All reference to the Contractor under this Section 10.7 will also include Contractor's employees, agents, and Subcontractors.

ARTICLE 11 INSURANCE AND BONDS

~~**§ 11.1 Contractor's Insurance and Bonds**~~

~~**§ 11.1.1** The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.~~

~~**§ 11.1.2** The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.~~

~~**§ 11.1.3** Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.~~

~~**§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.~~

~~**§ 11.2 Owner's Insurance**~~

~~**§ 11.2.1** The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.~~

~~**§ 11.2.2 Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.~~

[Continued on next page.]

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§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 Prior to commencement of the Work, Contractor shall obtain all the insurance required by the Contract Documents and provide evidence satisfactory to Owner that such insurance has been procured. Review of the Contractor's insurance by Owner or the specification or approval of the insurance in this Contract or of its coverage or amount shall not relieve or decrease the liability of Contractor under the Contract Documents or otherwise. Contractor shall include in its bid the cost of all insurance and bond costs required to complete the base bid Work and accepted alternates.

§ 11.1.2 The Contractor shall purchase and maintain in full force and effect the following insurance coverage without interruption from the date of commencement of the Work through the date of Final Acceptance and termination of any coverage required to be maintained after final payment, including, but not limited to, during the performance of any corrective Work required by Section 9.10. Completed Operations coverage shall remain in force for three (3) years after Final Acceptance. All coverages shall be written on an occurrence basis, reasonably acceptable to the Owner, and written for at least the minimum limits specified in Section 11.1 or required by law, whichever coverage is greater.

§ 11.1.3 Commercial General Liability (CGL)

§ 11.1.3.1 Contractor shall procure an occurrence-based Commercial General Liability (CGL) insurance policy, written on an ISO-based occurrence form or its equivalent. Such insurance shall provide coverage for personal injury, bodily injury, and property damage liability arising from Contractor's operations in connection with the Work, whether such operations are by Contractor or Subcontractors and suppliers of any tier; owned, non-owned, and hired vehicles; work the Contractor may subcontract or sublet to others; and the indemnity provisions of this Contract. Without limiting the foregoing, such insurance shall protect the Contractor and additional insureds required by this Article 11 from claims set forth below that may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor or the additional insureds may be legally liable, whether such operations are by the Contractor, a Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation (industrial insurance), disability benefit, and other similar employee benefit acts that are applicable to the Work to be performed in the form of Stop Gap Liability Insurance (Employer's Contingent Liability Insurance);

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for bodily injury or property damage arising out of completed operations;

.7 Claims involving contractual liability insurance applicable to Contractor's obligations under Section 3.18 ("Indemnification"); and

.8 Claims for bodily injury and property damage resulting from mold and fungus.

§ 11.1.3.2 Without limiting the foregoing, this CGL insurance shall be on a comprehensive basis and include all major divisions of coverage, including, but not limited to:

.1 Premises and Operations;

.2 Products and Completed Operations;

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.3 Explosion, Collapse, and Underground (XCU);

.4 Owners and Contractors Protective;

.5 Personal and Advertising Injury, with employment exclusion deleted;

.6 Blanket contractual, including specific provision for Contractor's obligation under the indemnity provisions of this Contract; and

.7 Broad Form Property Damage.

§ 11.1.4 Automobile Liability: Such insurance shall provide coverage for all owned, non-owned, and hired automobiles. It shall cover claims for damages because of bodily injury, death of a person, or property damage arising out of ownership, maintenance, or use of a motor vehicle (including loss of use thereof arising out of operation of automobiles), including Comprehensive Automobile Liability, Bodily Injury, and Property Damage Combined Single Limit.

§ 11.1.5 Umbrella Policy: Contractor shall procedure a true umbrella policy that provides excess limits over the primary layer.

§ 11.1.6 Employer's Liability: Contractor shall provide an employer's liability policy providing coverage for liability to employees for work-related bodily injury or disease, other than liability imposed by workers' compensation law.

§ 11.1.7 Workers' Compensation: Contractor shall provide, and require Subcontractors of any tier to provide, workers' compensation insurance as required by the industrial insurance laws of the State of Washington. In addition, Contractor shall procure Stop Gap Liability Insurance (Employer's Contingent Liability Insurance).

§ 11.1.8 The Contractor's insurance obtained under this Section 11.1 will:

.1 Name the Owner, the Architect, the Owner's consultants, as well as their directors, officers, employees, and agents, as additional insureds under CG 2010 and CG 2037 or their equivalent.

.2 Include a severability of interest (cross liability clause) in favor of the Owner for Work performed under this Contract.

.3 Be designated and endorsed as primary coverage for both defense and indemnity, and any Owner's policies shall be excess and non-contributory.

.4 Provide a waiver of any rights of subrogation against the Owner.

.5 Have per-project general aggregate provisions in accordance with the limits set forth in Section 11.1, which provisions may be modified in the Special Conditions. The insurance shall be endorsed to have the general aggregate apply to this Project only.

.6 Without limiting the foregoing, the insurance described above shall include coverage for underground collapse and explosion exposures.

§ 11.1.9 Any company writing the insurance to be obtained pursuant to this Section 11.1 shall be authorized to do business in the State of Washington. Insurance carriers providing insurance in accordance with the Contract Documents must be acceptable to Owner and shall possess an A.B. Best's policyholder's rating of "A" or better and a financial rating of no less than "VIII."

§ 11.1.10 Losses up to the deductible amount of any insurance under this part shall be the responsibility of the Contractor.

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§ 11.1.11 The Contract Sum includes an amount to pay the premium for insurance required under the Contract Documents and to name the Owner, the Architect, and others listed in the Contract Documents as additional insureds on all insurance policies required by Article 11.

§ 11.1.12 There shall be no self-insured retention without the prior written approval of the Owner.

§ 11.1.13 If the Owner is damaged by the failure of the Contractor to maintain any of the insurance in this Article 11 or to so notify the Owner, Contractor shall bear all costs attributable thereto. The Owner may withhold payment pending receipt of all certificates of insurance. Failure to withhold payment shall not constitute a waiver.

§ 11.1.14 Contractor shall comply with the Washington State Industrial Insurance Act and, if applicable, the Federal Longshoremen's and Harbor Workers' Act and the Jones Act.

§ 11.2 Coverage Limits: The minimum coverage limits for Contractor's liability insurance shall be as follows:

§ 11.2.1 Commercial General Liability (CGL):

.1 At least $2,000,000 General Aggregate Limit (Other than Products-Completed Operations).

.2 At least $1,000,000 Each Occurrence Limit.

.3 At least $1,000,000 Products-Completed Operations Aggregate Limit.

.4 At least $1,000,000 Personal Injury and Advertising Liability Limit Each Occurrence.

§ 11.2.2 Automobile Liability: At least $1,000,000 Combined Single Limit for Automobile Bodily Injury and Property Damage Liability, Each Accident or Loss.

§ 11.2.3 Umbrella Policy: Excess limits over the primary layer in an amount not less than $5,000,000.

§ 11.2.4 Employer's Liability: At least $1,000,000 Each Occurrence Limit.

§ 11.2.5 Workers' Compensation: Contractor shall provide workers' compensation insurance in the amounts required by the industrial insurance laws of the State of Washington for any employees not subject to the Washington State workers' compensation statute. For such employees, Contractor shall provide, and cause each Subcontractor to provide, workers' compensation insurance with a private company in an amount equivalent to that provided by the workers' compensation statute, but no less than a $1,000,000 limit of liability for the protection of its employees not otherwise protected. Stop Gap Liability Insurance (Employer's Contingent Liability Insurance) shall be at least $1,000,000 Each Occurrence.

§ 11.3 Proof of Insurance

§ 11.3.1 Prior to commencement of the Work, any presence on the site, or exposure to loss can occur, and in any event within seven (7) days after the Owner has issued its Notice to Proceed, the Contractor shall furnish the Owner and Architect with the following:

.1 Two (2) copies of Certificates of Insurance evidencing all insurance required by the Contract Documents;

.2 A written statement of the actual costs (expressed as a percentage) of the Contractors' liability insurance under Article 11;

.3 Endorsements for additional insureds as listed in Section 11.1.8;

.4 Two (2) copies of Department of Labor & Industries statements for state workers' compensation coverage; and

.5 A copy of any builder's risk policy required by Section 11.4.

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§ 11.3.2 All insurance policies and certificates must be signed copies. Edition dates of endorsements on policies obtained under this Article 11 shall be consistent.

§ 11.3.3 All policies shall include the premium percentage to be paid by the Contractor for increases in the Contract Sum.

§ 11.3.4 Contractor shall furnish to the Owner copies of any subsequently issued endorsements amending, modifying, altering, or restricting coverage or limits.

§ 11.3.5 Policies or certificates obtained under this part shall verify that the policy contains coverage for blanket contractual liability, including both oral and written contracts, and acknowledge the indemnification provisions and liability coverages called for by this Contract.

§ 11.3.6 Upon written request, Contractor shall provide a copy of its policies obtained under this part to the Owner.

§ 11.3.7 All insurance certificates obtained pursuant to this part will:

.1 Name Owner's Project number and Project title.

.2 State the insurance carrier's A.B. Best rating.

.3 Evidence full compliance with the requirements of Sections 11.1-11.3.

.4 Specifically require written notice by certified mail must be provided to the Owner and Architect at least forty-five (45) days before the policies expire, are cancelled, or are reduced; the limits are decreased; or the additional insureds removed, except that thirty (30) days' notice shall be required for surplus line insurance.

§ 11.3.8 Notwithstanding anything herein to the contrary, the Contractor shall provide all bonding, insurance, and permit documentation as required by governmental entities for all portions of the Project.

§ 11.3.9 The Contractor shall ensure and require that Subcontractors of any tier have insurance coverage to cover bodily injury and property damage on all operations and all vehicles owned or operated by Subcontractors of all tiers in the minimum amount of $1,000,000 per occurrence with a $2,000,000 general aggregate limit. Also, the Subcontractors shall name the Contractor and the Owner and cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.3.10 Owner may withhold payment pending receipt of all certificates of insurance meeting the requirements of Section 11.3.1. Failure to withhold payment shall not constitute a waiver of any provision of the Contract.

§ 11.4 Builder's Risk Insurance:

§ 11.4.1 Owner will purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the Contract Sum including all Change Orders for the Work and cost of materials supplied or installed by others composing the total value for the entire Project on a replacement-cost basis, excluding earthquake and flood coverage, without optional deductibles. Such property insurance will be maintained, unless otherwise provided in the Contract Documents or agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided herein or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.4 to be covered, whichever is later.

§ 11.4.1.1 This insurance will include interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project.

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§ 11.4.1.2 Contractor will be responsible for all losses up to the policy deductible up to a maximum deductible amount of $10,000.

§ 11.4.1.3 If the Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion thereof, such occupancy or use will not cause this insurance to be canceled or lapse on account of such partial occupancy or use. Consent of the Contractor and of the insurance company or companies to such occupancy or use will not be unreasonably withheld.

§ 11.4.1.4 This property insurance will cover all portions of the Work stored off-site and portions of the Work in transit. All tools and equipment of the Contractor and Subcontractors of any tier not intended as part of the construction or installation of the Work will be the sole responsibility of the Contractor.

§ 11.4.2 If Contractor believes it has a loss that is covered by Builder's Risk Insurance and it is likely to exceed the policy deductible, Contractor will notify the Owner as soon as practicable, but no later than forty-eight (48) hours.

§ 11.5 Waiver of Subrogation: Owner and Contractor waive all subrogation rights against each other, any Subcontractors, separate contractors described in this Contract, if any, and any of their Subcontractors (i.e., Sub-subcontractors), for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to 11.4 or otherwise applicable to the Work, except such rights as they have to proceeds of such insurance held by Owner as fiduciary. The Owner does not waive the subrogation rights to the extent of its property insurance on structures or portions of structures that do not comprise the Work. The policies will provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation will be effective to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.6 Payment and Performance Bonds

§ 11.6.1 In accordance with Chapter 39.08 RCW ("Contractor's Bond"), Contractor will furnish to the Owner bonds, with a surety company admitted and licensed in the State of Washington and acceptable to the Owner, conditioned that Contractor will: (1) faithfully perform all provisions of this Contract (the "Performance Bond"); and (2) pay all laborers, mechanics, Subcontractors, and materialmen, and all persons who supply such person, persons, or Subcontractors, with provisions and supplies for carrying out the Project, as well as pay the taxes, increases, and penalties incurred on the Project under state law (the "Payment Bond"). Each of these two bonds will be in the full amount of the Contract Sum, and said amounts will be increased in the event that the Contract Sum increases due to an approved Change Order. Such surety company will possess an A.M. Best rating of "A" or better and a financial rating of no less than "IX." The Payment Bond and the Performance Bond will each be made using the form AIA Document A312-2010, modified only to provide that "The bonds are payable to Longview School District No. 122, State of Washington, per RCW 39.08.030(1)," and that "The surety agrees to be bound by the laws of the State of Washington and subject to the jurisdiction of the state per RCW 39.08.010(5)."

§ 11.6.2 All reinsurers that may be called upon to support or share in a surety's obligations specified in connection with the Performance Bond and Payment Bond obligations required of the Contractor by this Contract must also have an A.M. Best rating of "A" or better and financial rating of not less than "IX."

§ 11.6.3 Within seven (7) days of the issuance of Owner's Notice of Intent to Award the Contract, the Contractor will deliver evidence of its bondability to the Owner. Within seven (7) days after its execution of the Contract, the Contractor will deliver copies of the bond to the Owner and the Architect.

§ 11.6.4 THE OWNER MAY DECLINE TO ENTER INTO THE CONTRACT IF THE REQUESTED EVIDENCE OF BONDABILITY IS NOT RECEIVED. THE CONTRACTOR WILL NOT PROCEED WITH THE WORK UNTIL SUCH SURETY BOND IS RECEIVED. Evidence of bondability shall include the percentage to be paid by the Contractor for increases in the Contract Sum.

§ 11.6.5 Upon request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor will promptly furnish a copy of the bond(s) or will authorize a copy to be furnished.

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§ 11.6.6 Additional Bond Security: Contractor will promptly furnish additional security required to protect Owner and persons supplying labor or materials required by this Contract if: (1) Owner has a reasonable objection to the surety; or (2) Any surety fails to furnish reports on its financial condition if required by Owner.

§ 11.6.7 Potential Subcontractors' Payment and Performance Bonds. Within ten (10) days after the issuance of the Conditional Notice to Proceed, any Subcontractors so required in the Bidding or Contract Documents or Special Conditions shall deliver evidence of their payment and performance bondability to the Owner through the Contractor. The evidence shall include a letter from the bonding company that includes the price of a payment and performance bond to be issued during the 30-day period after the Conditional Notice to Proceed. The surety company must be acceptable to the Owner and admitted and licensed in the State of Washington, with an A.M. Best rating of "A" or better and a financial rating of no less than "VIII." The bond(s) shall be in an amount equal to the full contract sum of the subcontract between the Subcontractor and the Contractor but shall not include sales tax. The bonds shall be conditioned that the Subcontractor shall faithfully perform all the provisions of its subcontract, payment of all obligations arising thereunder, and for one year's maintenance for correction of defective work. If the Owner elects to require a payment and performance bond from one or more of the Subcontractors, it will so notify the Contractor in writing within fourteen (14) days of receipt of the evidence of bondability from the respective Subcontractor, in which case the Contract Sum shall be increased by a Change Order in the amount specified in the letter, unless otherwise agreed by the parties. The Owner shall not be responsible for the costs of any Subcontractor bonds it requires until the Owner receives a copy of the bond. THE OWNER MAY DECLINE TO ENTER INTO THE CONTRACT OR MAY REQUIRE A CHANGE OF SUBCONTRACTOR AT NO INCREASE IN THE CONTRACT SUM OR CONTRACT TIME IF THIS EVIDENCE OF BONDABILITY IS NOT RECEIVED. THE OWNER MAY WITHHOLD PAYMENT TO THE CONTRACTOR UNTIL SUCH SURETY BONDS ARE RECEIVED. Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made. The Subcontractors responsible to the Contractor for the work listed in the Instructions to Bidders must comply with the above Section to the extent directed by the Owner.

§ 11.6.8 If the Owner is damaged by the failure of Contractor to maintain any of the bonds or insurance in this Article 11 or elsewhere in the Contract Documents or to so notify the Owner, then the Contractor will bear all costs attributable thereto. The Owner may withhold payment pending receipt of all certificates of insurance and bonds. Failure to withhold payment will not constitute a waiver.

~~**§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.~~

~~**§ 11.3 Waivers of Subrogation**~~

~~**§ 11.3.1** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.~~

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~~**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.~~

~~**§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance**~~
~~The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.~~

~~**§11.5 Adjustment and Settlement of Insured Loss**~~
~~**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.~~

~~**§ 11.5.2** Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.~~

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's or the Owner's request, ~~or~~ to requirements of a governmental authority, or as otherwise specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, Owner, or governmental authority, be uncovered for the ~~Architect's~~ requesting party's examination and be replaced at the Contractor's expense without change in the Contract Time or Contract Sum.

§ 12.1.2 If a portion of the Work has been covered that the Architect, Owner, or governmental authority has not specifically requested to examine prior to its being ~~covered, the Architect~~ covered and for which neither the Contract Documents nor governmental laws or regulations required inspection, the Architect, Owner, or governmental authority may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Owner or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed, or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

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§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one (1) 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 ~~Section 9.9.1,~~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 12.2.2 with no change in the Contract Sum 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. ~~The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.~~ If the Contractor does not promptly and in accordance with the provisions of this Section 12.2.2 begin correcting the Work designated in the notice, the Owner may proceed to correct the Work, the Owner may without further notice dispose of materials and equipment as it sees fit, and the Contractor will be liable for all associated costs. This obligation shall survive acceptance of the Work under the Contract and termination of the Contract, is in addition to other warranties provided by contract or law, and does not establish a time limit for damages.

.1 If, in the Owner's opinion, the nonconforming Work prevents the use of a portion of the facility, immediate response is required to prevent further damage or to restore security to prevent external entrance, and/or there is a safety hazard (e.g., break in the waterline, sprinkler system failure, failure of the heating system, inability to close or lock exterior door, etc.), the Contractor shall initiate corrective work on site the same day if the Contractor is notified prior to noon, or by noon the following day if notified after noon, and shall complete corrective action within forty-eight (48) hours.

.2 If, in the Owner's opinion, the nonconforming Work has the potential of becoming a safety hazard, of affecting site security, or of limiting the use of the facility (e.g., potential loss of heat in a single classroom, failure of one or more plumbing fixtures, loose carpet seam in corridor, interior door lock not working, etc.), the Contractor shall initiate corrective work on site within two (2) working days and shall complete corrective action within five (5) working days.

.3 If, in the Owner's opinion, the nonconforming Work does not have an impact on the use of the building, but must be fixed (e.g., interior door closer broken, window cracked, wall covering seam coming loose, etc.), the Contractor shall initiate corrective work on site within fourteen (14) days and shall complete corrective action within twenty-eight (28) days.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

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§ 12.3 Acceptance of Nonconforming Work

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 and correction, in which case the Contract Sum will be reduced ~~as appropriate and equitable~~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.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the ~~place where the Project is located~~ state of Washington, excluding that jurisdiction's choice of law rules. ~~If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.~~ The venue for any litigation relating to or arising under this Contract shall be in Cowlitz County Superior Court.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.2.3 If a majority of the ownership or the control of Contractor is acquired by a third party, and such acquisition reasonably imperils performance or creates a conflict of interest that the Owner, in its sole discretion, cannot reasonably reconcile, then the Owner may terminate this Contract at any time pursuant to Section 14.2, except that the Owner shall give the Contractor thirty (30) days' written notice of termination and the opportunity for the Contractor to cure prior to termination.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law. However, the Contractor's sole remedy for claims, disputes, and other matters in question by the Contractor, whether direct or indirect, arising out of or relating to the Contract Documents or breach thereof, except claims which have been waived under the terms of the Contract Documents, is the dispute resolution procedure of Article 15.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made at an appropriate time and as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities having jurisdiction. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to or provided by the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect and Owner timely notice of when and where tests and inspections are to be made so that the Architect and Owner may be present for such procedures. The independent testing agency shall prepare the test reports, logs, and certificates applicable to the specific inspections and tests and promptly and simultaneously deliver the specified number of copies of them to the designated parties. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

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§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Owner and Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

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

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work. The Contractor shall provide the Owner and Architect at least forty-eight (48) hours' notice prior to all tests and inspections.

§ 13.4.7 If the Owner is responsible under the Contract Documents, law, or regulation to pay for an inspection of any inspector, consultant, or Architect, the Owner shall be required to pay only for the first actual inspection. If the Contractor arranges for an inspection and an extra cost is incurred because the inspector is required to wait, leave without inspecting, perform a partial inspection, return to complete or reinspect, or otherwise to expend time other than for the primary inspection, the Contractor shall be responsible for all such costs to the extent caused by the Contractor. If the Contractor does not pay the charges for which it is responsible within sixty (60) days of billing, the Owner has the option to pay the charges directly and deduct from the next progress payment for the amount paid plus a ten percent (10%) handling fee.

§ 13.4.8 No acceptance by the Owner of any Work shall be construed to result from any inspections, tests, or failures to inspect or test by the Owner, the Owner's representatives, the Architect, or any other person. No inspection, test, failure to inspect or test, or failure to discover any defect or nonconformity by the Owner, the Owner's representatives, the Architect, or any other person shall relieve the Contractor of its responsibility for meeting the requirements of the Contract Documents or impair the Owner's right to reject defective or nonconforming items or right to avail itself of any other remedy to which the Owner may be entitled, notwithstanding the Owner's knowledge of the defect or nonconformity, its substantiality, or the ease of its discovery. Entities performing inspections and/or testing do not have the authority to direct the Contractor's means and methods and are not agents or representatives of the Owner or Architect. Inspections that meet the requirements of code shall not override the requirements of the Contract Documents, which may be more stringent.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest ~~from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~as specified in the A101-2017 Agreement as revised.

§ 13.6 Written Notice

Written notice shall be deemed to have been duly served if delivered in person to the designated representative as identified in Sections 8.3-8.4 of the A101-2017, or to an officer of the corporation for which it was intended if the designated representative no longer works for that party; or if delivered at, or sent by facsimile, email, registered or certified mail, or courier service providing proof of delivery to, the last business address known to the party giving notice. The date of written notice shall be the earlier of the date of personal delivery, actual receipt by facsimile or email, or three (3) calendar days after the date of postmark.

§ 13.7 Statutes and Other Requirements

The Contractor shall abide by the provisions of all applicable Washington statutes and regulations and applicable provisions of the Cowlitz County Code and any applicable municipal code. Although a number of statutes are

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referenced in the Contract Documents, these references are not meant to be a complete list and should not be relied upon as such.

§ 13.7.1 Contractor Registration and Related Requirements. Pursuant to Chapter 39.06 RCW ("Public Works—Registration, Licensing, of Contractors"), the Contractor shall be registered and licensed as required by the laws of the State of Washington, including but not limited to Chapter 18.27 RCW ("Registration of Contractors"). The Contractor shall have: (1) a current state unified business identifier (UBI) number; (2) industrial insurance coverage for the Contractor's employees working in Washington as required in Title 51 RCW; (3) an Employment Security Department (ESD) number as required in Title 50 RCW; (4) a state excise tax registration number as required in Title 82 RCW; and (5) not be disqualified from bidding on any public works contract under RCW 39.06.010 (unregistered or unlicensed contractors) or RCW 39.12.065(3) (prevailing wage violations).

§ 13.7.2 Provisions for Aged and Handicapped Persons. The Contractor shall comply with applicable statutory provisions relating to public works of Chapter 70.92 RCW ("Provisions in Buildings for Aged and Handicapped Persons") and the federal Americans with Disabilities Act (ADA) and federal implementing regulations.

§ 13.7.3 Safety Standards. The Contractor shall comply with pertinent provisions of Chapter 49.17 RCW ("Washington Industrial Safety and Health Act") and Chapter 296-155 WAC ("Safety Standards for Construction Work").

§ 13.7.4 Unemployment Compensation. Pursuant to Chapter 50.24 RCW ("Contributions by Employers") in general and RCW 50.24.130 in particular, the Contractor shall pay contributions for wages for personal services performed under this Contract or arrange for a bond acceptable to the Commissioner of the Employment Security Department.

§ 13.7.5 Drug-Free Workplace. The Contractor and all Subcontractors of any tier shall fully comply with all applicable federal, state, and local laws and regulations regarding maintaining a drug-free workplace, including the Drug-Free Workplace Act of 1988. Any person not fit for duty for any reason, including the use of alcohol, controlled substances, or drugs, shall immediately be removed from the Work.

§ 13.7.6 Tobacco-Free Environment. Pursuant to RCW 28A.210.310, smoking or use of any kind of lighted pipe, cigar, cigarette, vaping device, or any other lighted smoking equipment, tobacco material, or smokeless tobacco product is prohibited on all District property.

§ 13.7.7 Weapons-Free Environment. The Contractor and its employees, agents, and Subcontractors of any tier shall not bring onto the Project site or onto any Owner property any firearm or any other type of weapon described in either RCW 9.41.280(1) or RCW 9.41.250. Any person violating this Section shall immediately be removed from the Work, and such a violation shall be grounds for termination of this Contract for cause at the Owner's discretion.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 ~~The~~ Except as provided by RCW 60.28.080, the Contractor may terminate the Contract if the Work is stopped for a period of ~~30~~ sixty (60) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped (excluding governmental orders related to COVID-19 that restrict, but do not require total stoppage, of work);
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped (excluding governmental orders related to COVID-19 that restrict, but do not require total stoppage, of work);
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has improperly not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work,

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repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect (during which period the Owner has the opportunity to cure), terminate the Contract and recover from the Owner payment for Work ~~executed,~~ properly executed for proven loss with respect to materials, equipment, tools, and construction equipment and machinery caused by such termination, as well as reasonable overhead and profit on ~~Work not~~ the Work properly executed, and direct costs incurred by reason of such termination. The total recovery of the Contractor shall not exceed the unpaid balance of the Contract Sum.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect (during which period the Owner has the opportunity to cure), terminate the Contract and recover from the Owner as provided in Section 14.1.3. The total recovery of the Contractor shall not exceed the unpaid balance of the Contract Sum.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may upon seven (7) days' written notice to the Contractor terminate (without prejudice to any right or remedy of the Owner) the whole or any portion of the Work or the Contract if the Contractor

- **.1** ~~repeatedly~~ refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make prompt payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** ~~repeatedly disregards~~ fails to comply with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority having jurisdiction; ~~or~~
- **.4** fails to prosecute the Work or any portion thereof with sufficient diligence to ensure the Substantial Completion of the Work within the Contract Time;
- **.5** is adjudged bankrupt, makes a general assignment for the benefit of its creditors, or a receiver is appointed on account of its insolvency;
- **.6** fails to comply with the provisions of RCW 28A.400.330 by permitting a worker on the Project having contact with children who has been convicted of or pleaded guilty to a felony crime involving children as described in Section 3.4.3; or
- **.7** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, ~~and upon certification by the Architect that sufficient cause exists to justify such action,~~ the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor on all or a portion of the Work and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; ~~and~~
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work; and
- **.4** Take or direct any or all of the actions in Section 14.5.1.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, ~~shall be certified by the Initial Decision Maker, upon application, and this obligation for payment~~ shall survive termination of the Contract.

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§ 14.2.5 If the Owner terminates a portion of the Work, the Contractor shall continue the performance of the remainder of the Work in accordance with the Contract Documents to the extent not terminated.

§ 14.2.6 If, after the Contractor has been terminated pursuant to this Section 14.2 or otherwise for cause, it is determined that none of the circumstances set forth in Section 14.2.1 exists, then such termination shall be considered a termination for convenience pursuant to Section 14.3.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for ~~increases~~ changes in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall ~~include profit~~ be consistent with the terms of the Contract Documents. No adjustment shall be made to the extent

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate (without prejudice to any right or remedy of the Owner) the whole or any portion of the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor consistent with the Contract Documents for Work properly executed; costs necessarily incurred by reason of the termination, including costs attributable to termination of Subcontracts; ~~and the termination fee, if any, set forth in the Agreement~~ and reasonable profit on the Work not executed, not to exceed two and a half percent (2.5%) of the Cost of the Work not performed. The total sum to be paid to the Contractor under this Section 14.4 shall not exceed the Contract Sum as reduced by the amount of payments otherwise made, by the larger of (1) the actual value or (2) the scheduled value of Work not terminated, and as otherwise permitted by this Contract. The amounts payable to the Contractor shall exclude the fair value of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the Owner or to a buyer pursuant to Sections 14.5.1.6 or 14.5.1.7.

§ 14.5 Effects of Termination By Owner

§ 14.5.1 Unless the Owner directs otherwise, after receipt of a Notice of Termination from the Owner pursuant to Section 14.2 or 14.4, the Contractor shall promptly:

- **.1** stop Work under the Contract on the date and as specified in the Notice of Termination;
- **.2** place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of any portion of the Work that is not terminated;
- **.3** procure cancellation of all orders and subcontracts, upon terms acceptable to the Owner, to the extent that they relate to the performance of Work terminated;
- **.4** assign to the Owner all of the right, title, and interest of the Contractor under all orders and subcontracts, as directed by the Owner, in which case the Owner shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;
- **.5** with the Owner's approval, settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts not assigned to the Owner;
- **.6** transfer title and deliver to the entity or entities designated by the Owner the fabricated or unfabricated parts; Work in process; partially completed supplies and equipment, materials, parts, tools, dies, jigs, and other fixtures; completed Work, supplies, and other material produced as part

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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;

.7 use commercially reasonable efforts to sell any property of the types referred to in Section 14.5.1.6. The Contractor shall not be required to extend credit to any buyer, and may acquire any such property under the conditions prescribed by and at a price or prices approved by the Owner, and the proceeds of any such transfer or disposition may be applied in reduction of any payments to be made by the Owner to the Contractor;

.8 take such action as may be necessary or as directed by the Owner to preserve and protect the Work and property related to this Project in the possession of the Contractor in which the Owner has an interest; and

.9 continue performance only to the extent not terminated.

§ 14.5.2 In arriving at any amount due the Contractor after termination, the following deductions shall be made:

.1 all unliquidated advance or other prior payments on account made to the Contractor applicable to the terminated portion of the Contract;

.2 any claim the Owner may have against the Contractor;

.3 an amount necessary to protect the Owner against outstanding or potential liens or claims; and

.4 the agreed price for or the proceeds of sale of any materials, supplies, or other things acquired by the Contractor or sold, pursuant to the provisions of Section 14.5.1.7, and not otherwise recovered by or credited to the Owner.

§ 14.5.3 If (and only if) the termination pursuant to Section 14.4 is partial, the Contractor may file a Claim for an equitable adjustment of the price or prices specified in the Contract relating to the continued portion of the Contract. Any claim by the Contractor for an equitable adjustment under this Section 14.5.3 must be asserted within sixty (60) days from the effective date of the partial Termination.

§ 14.5.4 The Contractor shall refund to the Owner any amounts paid by the Owner to the Contractor in excess of costs reimbursable under the Contract Documents.

§ 14.5.5 The Contractor shall, from the effective Date of Termination until the expiration of three (3) years after final settlement under this Contract, preserve and make available to the Owner, at all reasonable times at the office of the Contractor, and without charge to the Owner, all books, records, documents, photographs, and other evidence bearing on the costs and expenses of the Contractor under this Contract and relating to the terminated Work. The Owner may have costs reimbursable under this Article 14 audited and certified by independent certified public accountants selected by the Owner, who shall have full access to all the books and records of the Contractor.

§ 14.5.6 The damages and relief from termination by the Owner specifically provided in Article 14 shall be the Contractor's sole entitlement in the event of termination.

§ 14.6 Survival. The parties agree that Contractor's indemnification obligations under Sections 3.4.5.8, 3.18, 5.5.2 9.6.8, 9.8.1.2, and 10.3.5 shall survive termination or expiration of this Contract for any reason.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment, or interpretation of the Contract terms, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract Documents. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract Documents. The responsibility to substantiate Claims shall rest with the party making the Claim. Claims must be initiated in writing and include the information and substantiation required by the Contract Documents. Neither a Request for Information, nor a Construction Change Directive, nor a Change Order, nor a reservation of rights, nor minutes of a meeting, nor a Daily Report, nor any log entry, nor an Owner's request for or the Contractor's response to a Change Order proposal or a Proposal Request, nor a notice of a potential or future Claim shall constitute a Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

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§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty, or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable ~~law, but in any case not more than 10 years after the date of Substantial Completion of the Work.~~ law and the time limits identified in this Contract. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 ~~Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.~~ In an effort to reduce the incidence and costs to all parties of extended disputes, all Claims, direct or indirect, arising out of, or relating to, the Contract Documents or the breach thereof, except claims that have been waived under the terms of the Contract Documents, shall be decided exclusively by the following alternative dispute resolution procedure unless the parties mutually agree in writing otherwise. To the extent that the Owner and Contractor agree to any partnering process to help resolve disputes, such processes shall be in addition to, and not in place of, the mandatory dispute resolution procedures in the Contract Documents.

§ 15.1.3.2 ~~Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.~~ Except for Claims requiring notice before proceeding with the affected Work as otherwise described in the Contract Documents, the Contractor shall submit a written notice of any Claim to the Owner and the Architect within fourteen (14) days of the occurrence of the event giving rise to such Claim and shall include a clear description of the event leading to or causing the Claim. For all Claims, the Contractor shall submit a written Claim as provided herein within thirty (30) days of submitting the notice. Claims shall include a clear description of the Claim and any proposed change in the Contract Sum (showing all components and calculations) and/or Contract Time (showing cause and analysis of the resultant delay in the critical path and other information referenced in Section 8.3.2) and shall provide data fully supporting the Claim, including, without limitation, a complete explanation as to why the relief sought is not within the scope of the Contract Documents. The Contractor may delay submitting data by an additional fourteen (14) days if it notifies the Owner in its Claim that substantial data must be assembled. Failure to properly submit the notice or Claim shall constitute waiver of the Claim. The Claim shall be deemed to include all changes, direct and indirect, in cost and in time to which the Contractor (and Subcontractors of any tier) is entitled and may not contain reservations of rights without the Owner's written approval; any such unapproved reservations of rights shall be without effect. Any Claim of a Subcontractor of any tier may be brought only through, and after review by, the Contractor. For the purposes of calculating such time periods, an "event giving rise to a Claim" is not a Request for Information but rather is a response that the Contractor believes would change the Contract Sum and/or Contract Time. The fact that the Owner and the Contractor may consider, discuss, or negotiate an untimely or waived Claim shall in no way be deemed to constitute a waiver of any notice or other provisions of the Contract Documents.

§ 15.1.3.3 All notices and Claims shall be made in writing as required by the Contract and shall be addressed to the Owner's Designated Representative identified in the A101-2017 as revised. Any notice of a Claim of the Contractor against the Owner and any Claim of the Contractor, whether under the Contract or otherwise, must be made pursuant to and in strict accordance with the applicable provisions of the Contract. No act, omission, or knowledge, actual or constructive, of the Owner or the Architect shall in any way be deemed to be a waiver of the requirement for timely written notice and a timely written Claim unless the Owner and the Contractor sign an explicit, unequivocal written waiver approved by the Owner's Board of Directors. The fact that the Owner and the Contractor may consider, discuss, or negotiate a Claim that has or may have been defective or untimely under the Contract shall not constitute a waiver of the provisions of the Contract Documents unless the Owner and Contractor sign an explicit, unequivocal waiver approved by the Owner's Board of Directors. The Contractor expressly acknowledges and agrees that the Contractor's failure to timely submit required notices and/or timely submit Claims has a substantial impact upon and prejudices the Owner, including but not limited to the inability to fully investigate or verify the Claim, mitigate damages, choose alternative options, adjust the budget, delete or modify the impacted Work, and/or monitor time, cost, and quantities. For these and other reasons, the parties stipulate that the Owner is prejudiced by the Contractor's failure to timely submit notices and/or Claims as required by the Contract

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Documents, and that the Owner shall not be required to establish any actual prejudice in order to enforce the notice and Claim provisions of the Contract Documents.

§ 15.1.3.4 At any time following the Owner's receipt of the written Claim, the Owner may require that an officer of the Contractor, a principal of the Architect, and the Owner's superintendent or designee (all with authority to settle) meet, confer, and attempt to resolve the Claim. If the Claim is not resolved during such meeting, the Contractor may bring no litigation against the Owner unless the Claim is first subject to nonbinding mediation as described in this Article 15. This mediation requirement cannot be waived except by an explicit written waiver by both parties.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, including the dispute-resolution process and except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and maintain the Contractor's Construction Schedule, and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 ~~The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.~~ [Not used.]

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim, and a Claim must be made in accordance with this Article 15, or it will be waived. If the Contractor believes additional cost is involved for reasons including, but not limited to, (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension, or (7) other reasonable grounds, a Claim shall be filed in accordance with this Article 15. The Contractor shall not be entitled to an increase in the Contract Sum or Contract Time arising out of an error or conflict in or among the Contract Documents where the Contractor failed adequately to review the Contract Documents or failed to report the error or conflict to the Owner's project manager and Architect in a timely manner consistent with the requirements of the Contract Documents. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided in Section 15.1.3 shall be given, and a Claim must be made in accordance with this Article 15, or it will be waived. The Contractor's Claim shall include an estimate of any cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary. Any adjustment in the Contract Time arising from a Change or a Claim shall be limited to the change in the actual critical path of the Project directly caused thereby. If the delay was not caused by the Owner, the Contractor, a Subcontractor of any tier, or the Architect, or anyone acting on behalf of any of them, the Contractor is entitled only to an increase in the Contract Time in accordance with the Contract Documents but not a change in the Contract Sum. If the delay was caused by the Contractor, a Subcontractor of any tier, or anyone acting on behalf of any of them, the Contractor is not entitled to an increase in the Contract Time or in the Contract Sum.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction, and that the Work was on schedule (or not behind schedule through the fault of the Contractor) at the time the adverse weather conditions occurred. Neither the Contract Time nor the Contract Sum shall be adjusted for normal inclement weather. The Contractor shall be entitled to a change in the Contract Time only (but not a change in the Contract Sum) if the Contractor can substantiate to the reasonable satisfaction of the Owner and Architect that there was materially greater than normal inclement weather considering the full term of the Contract Time and using a 10-year average of accumulated record mean values from climatological data compiled by the U.S. Department of Commerce National Oceanic and Atmospheric Administration (NOAA) for the locale closest to the Project, and that the alleged abnormal inclement weather actually extended the critical path of the Work. The change in Contract Time shall be provisional until Substantial Completion has been achieved, at which time the change in the Contract Time shall be the extent to which the total net accumulated number of calendar days lost due to inclement weather from

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commencement of the Work until Substantial Completion exceeds the total net accumulated number to be expected for the same period from the aforesaid data.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes, without limitation:

.1 damages incurred by the Owner for rental expenses, for losses of ~~use,~~ income, profit, financing, business, and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal and home office overhead and expenses including, without limitation, the compensation of personnel stationed there, for losses of financing, business and reputation, for losses on other projects, for interest or financing costs, and for loss of profit, except ~~anticipated profit arising directly from the Work.~~ as explicitly allowed under the Contract Documents.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents, or to preclude an obligation of the Contractor to indemnify the Owner for direct, indirect, or consequential damages alleged by a third party.

§ 15.2 Initial Decision

§ 15.2.1 ~~Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.~~ [Not used.]

§ 15.2.2 ~~The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.~~ [Not used.]

§ 15.2.3 ~~In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.~~ [Not used.]

§ 15.2.4 ~~If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.~~ [Not used.]

§ 15.2.5 ~~The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.~~ [Not used.]

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§ 15.2.6 ~~Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~ [Not used.]

§ 15.2.6.1 ~~Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~ [Not used.]

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in ~~Sections 9.10.4, 9.10.5, and 15.1.7,~~ the Contract Documents, shall be subject to mediation as a condition precedent to the initiation of binding dispute resolution. This requirement cannot be waived except by an explicit written waiver signed by the Owner and the Contractor.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation ~~which, unless the parties mutually agree otherwise,~~. A request for mediation shall be filed in writing with the other party to the Contract, and the parties shall promptly attempt to mutually agree upon a mediator. If the parties have not reached agreement on a mediator within thirty (30) days of the request, either party may file the request with the American Arbitration Association (AAA) or such other alternative dispute resolution service to which the parties mutually agree, with a copy to the other party, and the mediation shall be administered by the American Arbitration Association (or other agreed service) in accordance with its Construction Industry Mediation Procedures ~~in effect on the date of the Agreement.~~ then in effect. A request for mediation shall be made in writing~~,~~ and delivered to the other party to the ~~Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation~~ Contract. Mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending ~~mediation for a period of 60 days from the date of filing,~~ mediation, unless stayed for a longer period by agreement of the parties or court order. ~~If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

§ 15.3.3 ~~Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.~~ [Not used.]

§ 15.3.4 The parties to the mediation shall share the mediator's fee and any filing fees equally. The mediation shall be held in ~~the place where the Project is located,~~ Poulsbo, Washington, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.3.5 An officer of the Contractor and the Owner's superintendent or designee must attend the mediation session with authority to settle the Claim. To the extent there are other parties in interest, such as the Architect or Subcontractors, their representatives, also with authority to settle the Claim, shall also attend the mediation session. Unless the Owner and the Contractor mutually agree in writing otherwise, all unresolved Claims shall be considered at a single mediation session that shall occur after Substantial Completion but prior to Final Acceptance by the Owner.

§ 15.4 Arbitration

§ 15.4.1 ~~If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually~~

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~~agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~ [Not used.]

~~**§ 15.4.1.1** A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~**§ 15.4.2** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~**§ 15.4.3** The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~**§ 15.4.4 Consolidation or Joinder**~~

~~**§ 15.4.4.1** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~**§ 15.4.4.2** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~**§ 15.4.4.3** The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~

§ 15.5 Litigation. Any disputes that are not resolved through negotiations or mediation shall be resolved by litigation and not by arbitration. The Contractor may bring no litigation on Claims unless such Claims have been properly raised and considered using the procedures of this Article 15. The Contractor shall have the burden to demonstrate in any litigation that it has complied with all requirements of this Article 15. All unresolved Claims of the Contractor shall be waived and released unless the Contractor has complied with the time limits of the Contract Documents, and litigation is served and filed within the earlier of (1) one-hundred and twenty (120) days after the Date of Substantial Completion approved in writing by the Owner, or (2) ninety (90) days after Final Acceptance. This requirement cannot be waived except by an explicit written waiver signed by the Owner and the Contractor. The pendency of a mediation (the time period between the written mediation request and the date of mediation) shall toll these deadlines until the earlier of the mediator providing written notice to the parties of impasse or thirty (30) days after the date of the mediation session. Neither the Contractor nor a Subcontractor of any tier, whether claiming under a bond, lien statute, or otherwise, shall be entitled to attorneys' fees directly or indirectly from the Owner (but may recover attorneys' fees from the bond or statutory retainage fund itself, to the extent allowable under law). The Owner may join the Contractor as a party to any litigation involving the alleged fault, responsibility, or breach of contract of the Contractor or Subcontractor of any tier.

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SECTION 00 73 43
WAGE RATES REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION

A. Washington State prevailing wage rates apply to this project. Access the wage rate information as follows:
   1. URL to the Department of Labor & Industries Prevailing Wage Rates: https://fortress.wa.gov/lni/wagelookup/prvWagelookup.aspx for current rates.
   2. Select Cowlitz County for location of public works project.

B. The Effective Date of wage rates used for this project will be based on the bid date found in Bid Form, or as modified by addenda.

END OF SECTION

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Memorial Stadium Upgrades

B. Owner's Name: Longview Public Schools.

C. The Project consists of the renovation and modernization of the existing stadium building serving Longview Schools including a new exterior ticket booth, gates, reroof and structural repairs, new mid-aisle handrails, locker room renovations, lighting, and painting.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is indicated on drawings.

B. Scope of alterations work is indicated on drawings.

1.04 WORK BY OWNER

A. General: Cooperate fully with Owner so Work may be carried out smoothly, without interfering with or delaying Work under this Contract or Work by Owner. Coordinate Work of this Contract with Work performed by Owner.

1.05 WORK UNDER OTHER CONTRACTS

A. Coordinate Work sequencing, schedules, etc., of all separate Contracts and cooperate fully with separate Contractors so Work under those Contracts may be carried out smoothly without interfering with or delaying Work under this Contract.

1.06 OWNER OCCUPANCY

A. Owner intends to occupy the Project upon Substantial Completion.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Complete and exclusive use of the construction areas except as outlined above will be permitted from Notice to Proceed until Substantial Completion.

D. Partial Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the work. Such placing of equipment and partial occupancy does not constitute acceptance of the total Work.

1. The Architect will prepare a Certificate of Substantial Completion for each portion of the Work to be occupied.
2. Contractor will obtain a Certificate of Occupancy from local building officials prior to occupancy.
3. Prior to partial occupancy, mechanical, electrical, and life safety systems to be fully operational. Upon occupancy, the Owner will operate and maintain mechanical, electrical, and life safety systems serving occupied portions of the building.
4. Upon partial occupancy the Owner will be responsible for maintenance and custodial services for occupied portions of the building.

1.07 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings. Do not disturb portions of the site beyond the areas in which the work is indicated. In the case of any damage to property adjacent to Owner' s property, restore area damaged to the satisfaction of respective property owners.

B. Protect sidewalks, asphalt paving, concrete, shrubs, and lawn areas at all times from spillage of materials used in carrying out the Work. Exercise care to preclude materials from clogging catch basins and yard drains. Leave all drainage items clean and in proper working condition.

C. Provide and maintain pedestrian protection and re-direction as required by the agency having jurisdiction standards.

D. Removal of equipment and materials: Clear the site and surrounding street areas of all equipment, apparatus, appliances, tools, unused materials, and similar items as rapidly as they cease to be needed in carrying out the Work.

E. Clean, repair, resurface, or restore existing surfaces to their original condition; or completely replace such surfaces to match existing, where damaged by construction operations.

F. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Others.
   3. Use of site and premises by the public.

G. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.
   3. Keep driveways and entrances clear and available to the Owner, the Owner' s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements.

H. Time Restrictions:
   1. Limit conduct of especially noisy exterior work to comply with local ordinances and with Owner.

I. Utility Outages and Shutdown:
   1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
   2. Prevent accidental disruption of utility services to other facilities.
   3. Do not interrupt electric, gas, water or other services to existing Owner occupied structures without prior notice to the Owner. Notice will only be approved by the Owner if submitted as a definite start time and a definite duration of down time.
   4. Contractor to schedule demolition, remodel, and new construction to accommodate Owner' s continued use of existing and/or new mechanical, plumbing, and electrical services as required for Owner' s continued occupancy and beneficial use of designated areas.
   5. Consult with public and private utility companies for location and extent of all utilities before commencing Work.
   6. Provide all services required. Protect and maintain existing utilities, active electrical conductors, sewers, pipes, and other active lines on the project property or in street excavations.
   7. Arrange for and pay cost of disconnecting, removing, relocating, capping, replacing, or abandoning of public and private utilities in the way of construction operation in accordance with serving utilities, local regulations, and governing codes. Cap utilities, pipes, sewers, electrical conductors and the like to be abandoned in accordance with instructions of governing authority or as directed.

J. Parking:
   1. Contractor to have full use of site and surrounding on-street parking.
   2. Coordinate with Owner for use of existing on-site parking areas.

1.08 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Correlation of Contractor submittals based on changes.

E. Procedures for preparation and submittal of application for final payment.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Submit a draft copy of Schedule of Values and Applications for Progress Payments for Architect and Owner review and comment prior to formal submittal. The length of the review period will be determined by Owner, Architect, and Contractor during pre-construction meeting.

C. Submit four (4) originals of Schedule of Values and Applications for Progress Payments.

1.03 SCHEDULE OF VALUES

A. Form to be used: AIA G703.

B. The schedule of values will be used as the basis for the Contractor' s application for payment.

C. Submit Schedule of Values within 10 days after date of Owner-Contractor Agreement.

D. Format: Beginning with the administrative requirements of the General Conditions, utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.

E. For each line item list sub-values of major products or operations of that section, if more than one in a particular section.

F. Include within each line item, a direct proportional amount of Contractor's overhead and profit.

G. For items on which progress payments will be requested for stored materials, break down the value into:
   1. The cost of materials delivered and unloaded.
   2. The total installed value.

H. The sum of all values listed in the schedule to equal the total contract sum.

I. List retainage(s) as required per General Conditions.

J. List allocations for "Achieving Final Completion" and as required per General Conditions.

K. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Monthly basis and per Owner's payment procedures.

B. Form to be used: AIA G702 and G703.

C. For each item, provide a column for listing each of the following:
   1. Item Number.
   2. Description of Work.
   3. Scheduled Values.
   4. Previous Applications.
   5. Work in Place and Stored Materials under this Application.
   6. Authorized Change Orders.

7. Total Completed and Stored to Date of Application.
8. Percentage of Completion.
9. Balance to Finish.
10. Retainage.

D. After draft copy is reviewed and accepted, execute certification by signature of authorized officer.

E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

G. Include the following with the application:
1. Construction progress schedule, revised and current as specified in Section 01 32 16.
2. Copies of invoices and requisitions as may be requested by Architect or Owner.
3. Summary of Waste Generated (Construction Waste Management) for the period of time being invoiced.
4. Confirmation of Payment to Suppliers/Subcontractors for the prior invoice period. Identify contract amount; invoice amount and date; and amount paid and date for each.
5. Project record documents as specified in Section 01 78 00, for review by Owner which will be returned to the Contractor.
6. Affidavits attesting to off-site stored products.
7. Materials and equipment stored off-site, furnish proof that Ownership of equipment or materials has been transferred to Owner, with certification of insurance coverage to be furnished by Contractor until incorporated into the Work.
8. Lien, claim releases from each subcontractor and material supplier for whose work, material, or equipment the Owner paid the Contractor for the prior period invoice.

H. When Architect or Owner requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

I. Include a final Schedule of Values, zeroing out Retainage.

1.05 MODIFICATION PROCEDURES

A. In accordance with the General Conditions, no work to be done resulting in a change to the Contract Sum or the Contract Time without written consent of the Owner in the form of a Change Order or a Construction Change Directive, prior to commencement of the work.

B. Minor Changes in the Work: The Architect may issue supplemental instructions authorizing minor changes in the work that do not involve adjustment to the Contract Sum nor the Contract Time.

C. Proposal Request:
1. Owner-Initiated Proposal Request:
a. Architect will issue a detailed description of proposed changes in the work that may require adjustment to the Contract Sum or Contract Time.
b. Architect will sequentially number Proposal Requests and maintain log.
c. Proposal requests issued by Architect are for information only, and not to be considered instructions to stop work or to execute the proposed change.
d. Within 10 working days after receipt of proposal request, submit a Change Order Proposal with cost adjustments to the Contract Sum and Contract Time necessary to execute the change.
2. Contractor-Initiated Proposal Request: Submit in the form of a Change Order Proposal.

D. Change Order Proposal:
1. Contractor will sequentially number all Change Order Proposals and all revisions.

2. Provide a complete description of the proposed change, indicating the effect of the proposed change on the Contract Sum and on the Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors.
3. Include itemized breakdown of cost including quantities of materials, labor costs with breakdown by trade, costs of rental equipment, transportation, storage, etc.
4. Include updated Construction Schedule that indicates the effect of the change including, but not limited to, changes in activity duration, start and finish dates, and activity relationships. Use available total float before requesting an extension of Contract Time.

E. Construction Change Directive:
1. Architect and Owner may issue a Construction Change Directive using AIA Document G714.
   a. Construction Change Directive to contain a complete description of the change in the work, and designate the method to be followed to determine changes in the Contract Sum or Contract Time.
2. Documentation: Maintain detailed records on a time and material basis of work required.
   a. Upon completion of the change in the work, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract for preparation of a Change Order by the Architect.
3. Payments to the Contractor will not be made on basis of a Construction Change Directive until it is made into a Change Order approved by Owner, Contractor, and Architect.
4. Portions of a Construction Change Directive will not be eligible to be made into a Change Order for partial payment.

F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

G. Substantiation of Costs: Provide full information required for evaluation.
1. Provide following data:
   a. Quantities of products, labor, and equipment.
   b. Taxes, insurance, and bonds.
   c. Overhead and profit.
   d. Justification for any change in Contract Time.
   e. Credit for deletions from Contract, similarly documented.
2. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

H. Change Orders:
1. Architect will sequentially number Change Orders.
2. Change Orders will be issued as a result of Change Order Proposals (COP) or Construction Change Directives (CCD), or a combination of COP' s and CCD' s and may be multiples of either.
3. Owner and Architect will review the changes to the Contract Sum and/or the Contract Time and may request the Contractor to provide additional information or to modify his proposal prior to inclusion in a Change Order.
4. Upon acceptance of the change in Contract Sum and/or Contract Time by the Owner, Contractor, and Architect, the Architect will prepare the Change Order on AIA Document G701 for signatures by all parties.

I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

K. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments and per the General Conditions, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 23 00
ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Description of Alternates.

B. Procedures for pricing Alternates.

C. Documentation of changes to Contract Sum and Contract Time.

1.02 DESCRIPTION

A. Materials and methods to be used in the base Bid and in the alternates have been described on the Drawings and in pertinent sections of these Specifications where applicable.

B. Method for stating the proposed Contract Sum is described on the Bid Form.

C. Alternate #1: Deductive
   1. Description: Remove scope of work related to replacing sinks and counters from 2nd Level Restrooms (022, 023, 025, & 026).

D. Alternate #2: Deductive
   1. Description: Remove painting scope at interior walls and floors of Press Box (034).

E. Alternate #3: Deductive
   1. Description: Remove exterior flags/banners and mounting bracket scope. See Section 10 83 00.

F. Alternate #4 : Deductive
   1. Description: Remove exterior spot lighting fixtures on south exterior wall.

1.03 SUBMITTALS

A. All alternates described in this Section are required to be reflected on the Bid Form as submitted by Bidders. Do not submit alternatives other than as described in this Section.

1.04 ACCEPTANCE OF ALTERNATES

A. Alternates described in this Section are required to be reflected on the Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement. Do not submit alternatives other than as described in this Section.

B. If the Owner elects to proceed on the basis of one or more of the described alternates, make all modifications to the Work required in furnishing and installing the selected Alternates to the approval of the Architect and at no additional cost to the Owner other than as proposed on the Bid Form.

C. Immediately after award of the Contract, or as soon thereafter as the Owner has made decision on which if any Alternates will be selected, thoroughly and clearly advise all necessary personnel and suppliers as to the nature and extent of Alternates selected by the Owner. Use all means necessary to alert those personnel and suppliers involved as to all changes in the Work caused by the Owner's selection or rejection of Alternatives.

D. Coordinate related Work and modify surrounding Work to integrate the Work of each Alternate.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.

1.03 REFERENCE STANDARDS

A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.

B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
   1. Note explicitly any non-compliant characteristics.

C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
   1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.

D. Limit each request to a single proposed substitution item.
   1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:
   1. Section 00 21 13 - Instructions to Bidders specifies time restrictions and the documents required for submitting substitution requests during the bidding period.
   2. If the Bid Date is changed, the deadline date for substitution requests is not changed, unless specificallly stated by Addendum.

B. Submittal Form (before award of contract):

1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

C. Architect will consider written requests from prime Bidders for substitutions.

D. If a request for substitution is sent directly to a consultant of the Architect, a detailed transmittal of the request shall be delivered simultaneously to the Architect.

3.03 ACCEPTANCE DURING PROCUREMENT

A. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

B. If the Architect approves a proposed substitution prior to receipt of Bids, the approval will be set forth in a written Addendum. Only approvals documented in a written Addendum will be binding.

3.04 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Submittal Form (after award of contract):
1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request (After Bidding/Negotiating). See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

B. Submit request for Substitution for Cause immediately upon discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

C. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
3. Bear the costs engendered by proposed substitution of:
   a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
   b. Other construction by Owner.
   c. Other unanticipated project considerations.

D. Substitutions will not be considered under one or more of the following circumstances:
1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
2. Without a separate written request.
3. When acceptance will require revisions to Contract Documents.

3.05 ACCEPTANCE DURING CONSTRUCTION

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

3.07 ATTACHMENTS

A. The required Substitution Request Forms (During the Bidding/Negotiating Stage) and (After the Bidding/Negotiating Phase) are included after this section.

END OF SECTION

SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: Date:

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

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Form Version: September 2013
CSI Form 1.5C

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Installer: _____ Address: _____ Phone: _____

History: ☐ New product ☐ 1-4 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

_____

_____

☐ Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: _____

_____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

_____

Savings to Owner for accepting substitution: _____ ($ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐Drawings ☐Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

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Form Version: September 2013
CSI Form 13.1A

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Attachments: ☐

A/E's REVIEW AND RECOMMENDATION

☐ Approve Substitution - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
☐ Approve Substitution as noted - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
☐ Reject Substitution - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

OWNER'S REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order.
☐ Substitution rejected - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐Contractor ☐Subcontractor ☐Supplier ☐Manufacturer ☐A/E

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SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.
B. Preconstruction meeting.
C. Site mobilization meeting.
D. Progress meetings.
E. Construction progress schedule.
F. Construction progress documentation.
G. Submittals for review, information, and project closeout.
H. Deferred submittals for jurisdictional approval.
I. Number of copies of submittals.
J. Requests for Interpretation (RFI) procedures.
K. Submittal procedures.

1.02 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Schedule meeting after Notice of Award.
B. Attendance Required:
    1. Owner.
    2. Architect.
    3. Contractor.
C. Agenda:
    1. Execution of Owner-Contractor Agreement.
    2. Submission of executed bonds and insurance certificates.
    3. Distribution of Contract Documents.
    4. Designation of personnel representing the parties to Contract.
    5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
    6. Scheduling:
        a. Construction progress schedule including critical scheduling requirements and determination of date of publication of Critical Path Method (CPM).
        b. Contractor's three-week "look ahead" schedule.
        c. Construction phasing.
        d. Long-lead items.
    7. Alternates.
    8. Procedures for maintaining project record documents, security, deliveries, safety, housekeeping, and first aid.
    9. Testing and inspections.
    10. Procedures for working relations with Owner’s staff.
    11. Construction waste management.

12. Use of site for parking, staging storage, temporary buildings, and construction activities.
13. Temporary heat, ventilation, and dehumidification.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

A. Schedule meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:
1. Contractor.
2. Owner.
3. Architect.
4. Contractor's superintendent.
5. Major subcontractors.

C. Agenda:
1. Use of premises by Owner and Contractor.
2. Owner's requirements.
3. Construction facilities and controls provided by Owner.
4. Temporary utilities provided by Owner.
5. Survey and building layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Requirements for start-up of equipment.
12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the work at maximum weekly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required:
1. Contractor.
2. Owner.
3. Architect.
4. Contractor's superintendent.
5. Major subcontractors.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of RFIs log and status of responses.
7. Review of off-site fabrication and delivery schedules.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.

10. Planned progress during succeeding work period, including 3-week "look-ahead" schedule.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Review Change Order Proposals.
15. Review commissioning status and issues.
16. Review sustainable design tracking and submittal procedures.
17. Other business relating to work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

F. Submit a 3-week "look-ahead" schedule at each progress meeting.

3.05 CONSTRUCTION PROGRESS DOCUMENTATION

A. Record Documents: Thoroughly coordinate all changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to properly show the change. Accuracy of records to be such that future searches for items shown in the Contract Documents may reasonably rely on information obtained from the approved Record Documents. Notation of an RFI # or COP # is not sufficient to document a change without noting the actual change on the Documents.
   1. Status of maintenance of Record Documents may be a prerequisite for approval of progress payments. If redline Record Documents are not kept current, Owner may withhold monthly payments.
   2. Prior to submitting request for final payment, submit the final Record Documents to the Architect and secure his approval.

B. Signed Permits: Maintain a notebook on site with copies of all permits and inspection reports made by the local building department. Signed copies of these permits and inspection reports are to be included in the project O&M manuals as required.

3.06 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
   2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for

claiming additional costs or delays in execution of the work.

1. Prepare a separate RFI for each specific item.
    a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
    b. Do not forward requests which solely require internal coordination between subcontractors.
2. Prepare in a format and with content acceptable to Architect.
    a. Provide form for Architect review and revise as required prior to first RFI submittal.
3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
    1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
    2. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
        a. Approval of submittals (use procedures specified elsewhere in this section).
        b. Approval of substitutions (see Section - 01 60 00 - Product Requirements).
        c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
        d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
    3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
    4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
        a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.

E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
    1. Official Project name and number, and any additional required identifiers established in Contract Documents.
    2. Owner's, Architect's, and Contractor's names.
    3. Discrete and consecutive RFI number, and descriptive subject/title.
    4. Issue date, and requested reply date.
    5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
    6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
    7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
    1. Indicate current status of every RFI. Update log promptly and on a regular basis.
    2. Note dates of when each request is made, and when a response is received.

3. Highlight items requiring priority or expedited response.
4. Highlight items for which a timely response has not been received to date.
5. Identify and include improper or frivolous RFIs.

H. Review Time: Architect will respond and return RFIs to Contractor within fourteen (14) calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 5:00 pm will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

I. Submit RFI's in a manner to not unreasonably encumber the Architect's ability to review and comment in the allowed time frame. Excessive and/or frivolous RFI's will result in extended review periods.

J. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.07 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals in tabular format.
1. Submit at the same time as the preliminary schedule.
2. Coordinate with Contractor's construction schedule and schedule of values.
3. Format schedule to allow tracking of status of submittals throughout duration of construction.
4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.08 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
1. Product data.
2. Shop drawings.
3. Samples for selection.
4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
1. Submittals to be identified by Specification section number with sequential submittal number under each section (example: 03 21 14-1, 03 21 14-2,...). Identification to be

indicated on transmittals and on Contractor's review stamp on each submittal copy. Resubmittals to be indicated on each transmittal and on each submittal.

2. Contractor to identify all long-lead items critical to the schedule.

C. Samples will be reviewed only for aesthetic, color, or finish selection. Contractor to notify Architect of any colors or items that will be discontinued in the near future.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.09 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Sustainability certification related submittals and reports.
3. Certificates.
4. Test reports.
5. Inspection reports.
6. Manufacturer's instructions.
7. Manufacturer's field reports.
8. Environmental Product Declarations (EPD).
9. Health Product Declarations (HPD).
10. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

C. Material Safety Data Sheets (MSDS) and Safety Data Sheets (SDS): MSDS and SDS are for the Contractor' s use in maintaining safe project conditions and are not required submittals. As such, they are not reviewed by the Architect and will be returned without review if submitted.

3.10 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Construction waste management documentation.
6. Other types as indicated.

D. Submit for Owner's benefit during and after project completion.

3.11 DEFERRED SUBMITTALS

A. Definition: Vendor or Contractor designed portion of the Contract documents that has not been included in the original Contract documents and are required to be reviewed and approved by appropriate jurisdictional authority prior to incorporating into the Work. These submittals may include shop drawings, calculations by a professional engineer, or additional design data, and submitted for permitting as a separate item. Professional Engineers are required to be experienced in design of this work and licensed in the State in which the Project is located.

B. Refer to Drawings for deferred submittals.

C. Verify with Building Department, additional items that will be required to be submitted.

D. Process:

1. Submit deferred submittal information to Architect for review prior to submitting for permitting.
2. Submit Architect-reviewed submittal to jurisdiction having authority for required building permitting.

3.12 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

3.13 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Use a separate transmittal for each item.
   2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
   3. Transmit using approved form.
      a. Use Contractor's form, subject to prior approval by Architect.
   4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
   5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
   6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
      a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
   7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
      a. Deliver submittals to Architect at business address.
   8. Schedule submittals to expedite the Project, and coordinate submission of related items.
      a. For each submittal for review, allow 14 days excluding delivery time to and from the Contractor.
      b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
      c. Multiple submittals will require additional time for review as determined by the Architect upon a prioritization determined by the construction.
      d. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Architect's approval, allow an additional 30 days.
   9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
   10. Provide space for Contractor and Architect review stamps.
   11. When revised for resubmission, identify all changes made since previous submission.
   12. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
   13. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
   14. Submittals not requested will not be recognized or processed.

B. Product Data Procedures:
   1. Submit only information required by individual specification sections.

2. Collect required information into a single submittal.
3. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
2. Do not reproduce Contract Documents to create shop drawings.
3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
1. Transmit related items together as single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.14 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt, but will take no other action.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.
B. Quality assurance.
C. References and standards.
D. Testing and inspection agencies and services.
E. Contractor's construction-related professional design services.
F. Contractor's design-related professional design services. Referred to as Delegated-Design Services.
G. Control of installation.
H. Mock-ups.
I. Tolerances.
J. Manufacturers' field services.
K. Defect Assessment.

1.02 REFERENCE STANDARDS

A. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry; 2020.
B. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2023b.
C. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.
D. ASTM C138/C138M - Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete; 2023.
E. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.
F. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2019a.
G. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.
H. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete; 2020.
I. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).
J. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.
K. ASTM E779 - Standard Test Method for Determining Air Leakage Rate by Fan Pressurization; 2019.
L. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.
M. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
N. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2021.

1.03 DEFINITIONS

A. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
   1. Design Services Types Required:
      a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor's sole responsibilities for construction means, methods, techniques, sequences, and procedures.
      b. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.

B. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.04 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
   1. Temporary sheeting, shoring, or supports.
   2. Temporary scaffolding.
   3. Temporary bracing.
   4. Temporary stairs or steps required for construction access only.
   5. Temporary hoist(s) and rigging.

1.05 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Base design on performance and/or design criteria indicated in individual specification sections.
   1. Submit a Request for Interpretation to Architect if the criteria indicated are not sufficient to perform required design services.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Owner.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Compliance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.

2. Test report submittals are for Architect's knowledge as Contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

E. Manufacturer's Field Reports: Submit reports for Architect's benefit as Contract administrator or for Owner.

1.07 QUALITY ASSURANCE

A. Testing Agency Qualifications:
   1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
   3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of Work and licensed in the State in which the Project is located.

1.08 REFERENCES AND STANDARDS

A. For products and Workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Maintain copy at project site during submittals, planning, and progress of the specific Work, until Substantial Completion.

C. Neither the Contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect will be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.09 TESTING AND INSPECTION AGENCIES AND SERVICES

A. See modified AIA Document A201 General Conditions of the Contract for Construction for additional requirements.

B. Inspections and tests to be paid by Owner are herein specified and are in addition to those conducted by Building Officials. Contractor shall provide such inspections and tests as required in addition to those listed herein to assume compliance with all requirements indicated, specified, or required to comply with all laws, ordinances, rules, and regulations bearing on the conduct of the Work.

C. Contractor shall be responsible for coordination of all required testing/inspection with Testing Laboratory, Architect, Engineer, Building Official, and Owner.

D. See Structural Specifications and notes in the Drawings for any additional testing and inspection requirements than those listed in this Section.

E. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

F. Submittals:
   1. Promptly process and distribute copies of all inspections and related instructions for corrective action required.
   2. Promptly process and distribute copies of all test reports and related instructions to assure necessary re-testing and replacement of materials with the least possible delay in progress of the Work.
   3. Distribute all inspection reports and test reports no later than 5-days following the activity to the Architect, Engineer (by discipline), Owner, Contractor, and Building Official.

G. Tests:
   1. Contractor is responsible for coordination and timing of all such tests herein specified. Contractor to consult and schedule Work requiring testing with the testing agency. Contractor to notify the testing agency and the Architect at least 24-hours in advance of the Work requiring testing.
   2. Testing costs required by defective Work or improperly timed notices or canceled Work without proper notice, shall be paid by Contractor.
   3. The following tests shall be made by an independent testing laboratory, selected and paid for by the Owner. Refer to Structural notes in drawings for additional information and requirements. All testing shall be in accordance with IBC, Chapter 17.
      a. Soil Compaction - Modified Proctor Procedure, ASTM D1557.
         1) Test fills and backfills as required by Geotechnical Soils Report.
         2) Testing is required only in areas under, or backfill against, structure and in areas of paving for vehicle traffic.
      b. Excavations, compaction of sub-grades, structural fills and backfills:
         1) Soil Inspecting and Testing:
            (a) Make required inspections and test including, but not necessarily limited to:
            (b) Visually inspect on-site and imported fill and backfill, making such test and retests as are necessary to determine compliance with the Contract requirements and suitability for the proposed purpose.
            (c) Make field density tests on samples from in-place material as required.
            (d) As pertinent, inspect and test the scarifying and re-compacting of cleaned sub grade; inspect the progress of excavating, filling, and grading; make density tests at fills and backfills as required by the soils report. Verify compliance with provisions of the Contract Documents and governmental agencies having jurisdiction.
      c. Concrete Density (Unit Weight) Test - Concrete Slabs Only:
         1) Perform ASTM C138/C138M Standard Test Method for Density, yield, and air content for every thirty yards of concrete delivered to job site.
         2) Perform calculations to determine unit weights, and by extrapolation, determine the actual water/cement ratio of the concrete.
         3) Report results of test to the Architect by noon of the following day.
      d. Concrete Slump Test - ASTM C143/C143M: Perform slump test for every concrete load.
      e. Concrete Cylinders - ASTM C31/C31M.
         1) Make 3-test cylinders for each class of concrete placed, for every concrete pour, and for every 100 cubic yards in a pour.
         2) Report the mix, slump, location in the structure, and the compression test results.

f. Concrete Compression Test - ASTM C39/C39M.
   1) Test 1-cylinder at 7-days, 1-cylinder at 28-days, and 1-cylinder when so directed.
   2) Report the mix, required strength, slump, date cylinder cast, location in structure, and tested strength.
g. Concrete Air Content Test - ASTM C138/C138M: Perform test for every pour of exterior flat Work.
h. Concrete Core Test - ASTM C42/C42M.
   1) Perform test only if required by Architect.
   2) Cut from locations directed by Architect.
i. Concrete Slab Moisture Content - ASTM F1869.
   1) Conduct anhydrous calcium chloride test for every 1000 square feet (or as directed by Architect).
   2) Control air temperature and relative humidity of the interior space during the time of the test. Air temperature shall be maintained at a minimum temperature of 68-degrees Fahrenheit and relative humidity shall be a maximum of 45 per cent during testing. Test report shall include the range of temperature and relative humidity of the interior space during the time of the test.
j. Concrete Slab Alkalinity - ASTM F710-98: Conduct Test for every 1000 square feet.
k. Measure Temperature and relative humidity of the building interior from the time that the building shell is closed until the floor finishes are applied. Measurements shall be recorded weekly and reported every other week. In a large compartmented building, measurements will be required in several locations.
   1) In accordance with Section 01 51 23 Temporary Heating, Ventilating, and Dehumidification, deliver data to Architect weekly.
l. Masonry Mortar and Grout Compressive Strength Tests - ASTM C1314-00a.
   1) Contractor shall construct for testing a set of prisms 3 for each type of structural masonry on project.
   2) Contractor shall construct a set of prisms for every 5000 square feet of each type of structural masonry.
m. Masonry Grout Test - ASTM C1019-00b: Construct and test three (3) specimens of grout for each grout pour.
n. Masonry Mortar Test - ASTM C109/C109M.
   1) Construct and test 3-specimens of mortar for each type of mortar on the project.
   2) Construct and test 3-specimens of mortar for every 5000 square feet of each type of structural masonry.
o. Nondestructive Testing (reference IBC Section 1708).
p. Fire Stopping and Smoke Barriers: See Sections 07 84 00 and 07 87 00.
q. Building Envelope Air Leakage Testing: ASTM E779 testing per the 2021 Washington State Energy Code (WSEC). See also Section 01 40 10.
   1) Commercial: The air leakage rate of the building envelope shall not exceed 0.25 cfm/sf of the building thermal envelope area at a pressure differential of 0.3 inch water gauge (75 Pa) in accordance with ASTM E779.

H. Inspections:
   1. The following inspections shall be made by an independent testing and inspection laboratory, selected and paid for by the Owner.
   2. Contractor is responsible for coordination and timing of all such inspections and tests herein specified. Consult and schedule Work requiring inspection with the inspection agency. Notify the inspection agency, Architect, and Owner at least 24-hours in advance of the Work requiring inspection/testing.
   3. Inspection and testing costs required by defective Work or improperly timed notices or canceled Work without proper notice or for per-diem costs associated with off-site

testing/inspection beyond 30 miles from project site, shall be paid by Contractor.

4. Inspections: Inspect and assure compliance with the Contract documents for the following Work:
   a. Site grading operations.
   b. Concrete Reinforcement Inspection:
      1) Prior to use, confirm all reinforcement steel bars comply with specified standards.
         (a) Require the supplier to furnish mill test reports to the testing laboratory for certification.
         (b) Tag identified steel at the supplier's shop.
         (c) Unidentified steel shall not be used in this project.
      2) Provide continuous inspection for all welding of reinforcement steel.
   c. Placement and condition of masonry reinforcement.
   d. Structural Steel Inspecting:
      1) Prior to use, confirm structural steel complies with the specified standards.
         (a) Material identified by mill test reports, and certified by the testing laboratory for certification.
         (b) Require the supplier to furnish mill test reports to the laboratory for certification.
         (c) Tag identified steel at the supplier's shop.
         (d) If steel arrives at the job site without such tags, it shall be rejected.
      2) Unidentified steel shall not be used on this project.
      3) Shop Welding and Field Welding (Reference IBC Section 1704):
         (a) Provide qualified testing laboratory inspector.
         (b) On single pass welds, inspect after completion of welding and prior to painting.
         (c) On multiple pass welds, and on butt welds with cover pass on the back side, provide continuous inspection.
      4) Field Welding: Provide continuous inspection by a qualified testing laboratory inspector.
      5) Structural Engineer of record shall perform the structural observation on all steel frames. Owner's testing and inspection laboratory shall perform all special inspections required by IBC, and continuously inform the structural engineer of all special inspections.
      6) Contractor shall be responsible for travel costs associated with Owner's testing of project steel fabrication observation/testing beyond 400 miles of project site.
   e. Concrete Inspection:
      1) Portland Cement:
         (a) Secure from the cement manufacturer Certificates of Compliance delivered directly to the concrete producer for further delivery directly to the testing laboratory.
         (b) Require the Certificates of Compliance to positively identify the cement as to production lot, bin or silo number, dating and routing of shipment, and compliance with the specified standards.
         (c) If so required by the Architect, promptly provide such other specific physical and chemical data as required.
      2) Placement Inspections:
         (a) Verify that all steel reinforcement is placed in accordance with Contract documents.
         (b) Throughout progress of concrete placement, make slump tests to verify conformance with specified slump.

(c) Using all required personnel and equipment throughout progress of concrete placement, verify that finished concrete surface will have the level or slope that is required by the Contract Documents.
(d) Note in reports any addition of water to the concrete mix during placement.

f. Masonry:
1) Verify that all steel reinforcement is placed in accordance with Contract Documents.
2) Verify that brick veneer anchors are being attached properly and at proper intervals.

g. Provide video inspection of all plumbing waste lines 4-inches diameter and larger, if required by Architect.

h. Inspect all installation of firestopping to verify compliance with applicable codes and standards.

I. Special Inspection: (Reference IBC Chapter 17)
1. In addition to the inspections listed in Part 2.02, the Owner shall employ an independent testing laboratory to provide special inspection on the types of Work listed in this section and/or called out in the structural notes on the Drawings if they are included in this project.
a. Types of Work:
1) Asphalt sub-base compaction and asphalt density.
2) Concrete with design compressive strength greater than 2500 psi.
3) Bolts installed in concrete.
4) Reinforcing steel and pre-stressing steel tendons.
5) Structural Welding (see exceptions IBC Section 1704 and 1707.2).
(a) Special moment-resisting steel frames.
(b) Welding of reinforcing steel. (See exception.)
6) High strength bolting.
7) Structural masonry when f1m is greater than 1500 psi for concrete units or 2600 psi for clay units.

J. Structural Observation:
1. When structural observation is required by IBC Section 1709, the observation will be conducted by the Structural Engineer of Record.
2. Reports will be made as required by IBC Section 1709.

K. Notices and Cooperation:
1. Contractor shall coordinate all such inspections and tests with proper authorities and notify Owner, Engineer, Architect, Owner and Building Official at least 24-hours in advance to allow them to witness such inspections or tests at their discretion.

L. Taking Specimens:
1. All specimens and samples for testing, unless otherwise provided in the Contract Documents, shall be taken by the testing personnel. All sampling equipment and personnel will be provided by the testing laboratory. All deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

M. Reports:
1. Reports of all inspections and tests shall be submitted to Owner, Architect, Engineer, and Building Department, except concrete density tests.
a. Concrete density tests shall be submitted to the Architect by noon of the day following the test.
b. Reports of concrete compression strength test and concrete moisture tests shall be forwarded within 24-hours after testing.
c. Inspection reports shall contain:
1) Job name, Address, Architect, Engineer, Contractor, Subcontractor

2) Name of Inspector, date of inspection, area of inspection, type of inspection such as Formwork, rebar, etc.
3) Report whether everything was acceptable or not. If not, why, and action initiated.
4) Concrete Reports: Areas of inspection/pours, type of concrete, concrete strength specified, mix total yardage poured, slumps, number of cylinders made and their nomenclature, air temperatures, admix specified and contained in delivered mix, weather conditions.

N. Defective Work:
1. Should testing indicate that concrete does not conform to Specification standards, Contractor shall be required to perform on-site load or core tests as directed at the expense of the Contractor.
a. Should such specimens fail to develop minimum specified strength, the faulty concrete and all adjacent Work affected shall be removed and replaced. Costs of tests, demolition and replacement at Contractor's expense.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and Workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise Workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. See Section 01 43 39 for Free Standing Building Mock-Up.

B. Before installing portions of the Work where mock-ups are required,construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and Workmanship. Additional mock-up requirements are defined in individual technical sections.

C. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.

D. Integrated Exterior Mock-ups: Construct integrated exterior mock-up as indicated on drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.

E. Additional Mock-Ups: As defined in individual Specification Sections.

F. Notify Architect fifteen (15) working days in advance of dates and times when mock-ups will be constructed.

G. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.

H. Perform tests under provisions identified in this section and identified in the respective product specification sections.

I. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

J. Obtain Architect's approval of mock-ups before starting Work, fabrication, or construction.

K. Architect will use accepted mock-ups as a comparison standard for the remaining Work.

L. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

M. Where possible salvage and recycle the demolished mock-up materials.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION - ROLES AND RESPONSIBILITIES

A. See individual specification sections and Structural Notes in Drawings for additional testing and inspection required.

B. Testing Agency Duties, including but not limited to:
   1. Test samples of mixes submitted by Contractor.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.
   5. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   6. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   7. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   8. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   9. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   10. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   11. Per-diem costs (travel, accommodations, meals) required of Owner's testing/inspection services beyond 100 miles from project site.

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of

surfaces and installation, quality of Workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

SECTION 01 41 00
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 REFERENCE TO BUILDING CODE:

A. Wherever the term "building code" is used in the Specifications, said term shall be construed to mean the edition of the governing building code as adopted and amended by local agencies under which this project was reviewed and approved.

1.02 STANDARDS

A. Any material specified by reference to the number, symbol, or title of a specific standard, such as a Commercial Standard, a Federal Specification, a Trade Association Standard, or other similar standards shall comply with the requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the executed Contract, except as limited to type, class or grade, or modified in such reference.

B. The standards referred to, except as modified in the Specifications, shall have full force and effect as though printed in the Specifications. These standards are not furnished to Bidders for the reason that the manufacturers and trades involved are assumed to be familiar with their requirements. The Architect will furnish, upon request, information as to how copies of the standards referred to, may be obtained.

C. Comply with Federal, State, and Regional requirements for hazardous substances. This project has established a Hazardous Substance Communication Program. The purpose of the program is to ensure that employees are aware of the substances that they may come in contact with and the associated hazards in dealing with such substances. The program explains training, labeling requirements, documentation, accessing information, accountability, and auditing responsibilities. The program recognizes that Contractors and their employees are subjected to special hazardous substances as part of existing structures or in use at the project site. In addition, the Hazardous Communication Program requires:
   1. Prior to commencing Work on this project. Contractor and/or employees must sign an agreement that they acknowledge the Hazard Communication Program and have communicated it to their employees.
   2. Contractors shall provide a list of potentially hazardous substances to the Owner prior to Working on or bringing substances onto the project site.
   3. The Owner may not authorize the Work or continued Work of a Contractor who fails to comply with the Hazardous Communication Program.

D. General Contractor is responsible for compliance with all applicable codes, regulations, and directives of duly constituted authorities having jurisdiction, insofar as the performance of the Work and completed improvements are concerned, for all Work performed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 41 23
PERMITS AND FEES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Permits and fees.

1.02 PERMITS AND FEES

A. Owner Responsibilities:
   1. Permits:
      a. Building Permit: Owner will submit application, Drawings, and Specifications. Contractor will secure Permit from the Building Department.
   2. Fees:
      a. Plan Review Fee (Building Department).
      b. Building (General) Permit Fee.
      c. Water System Development Charge.
      d. Sewer System Development Charge.
      e. Traffic Impact Fee.

B. Contractor Responsibilities:
   1. Permits and Fees: The Contractor shall be responsible for procuring and paying for the permits listed, including but not limited to:
      a. Building Permit (secure from the issuing agency, Owner will pay fee).
      b. Electrical Permit.
      c. Mechanical Permit.
      d. Plumbing Permit.
      e. Demolition Permit.
      f. Southwest Washington Air Pollution Control Authority, for all emissions into the atmosphere from the completed project. All plan reviews, permits, fees, inspections including deferred submittals.
         1) For Clarification: Under SWAPCA requirements, the Engineer-of-Record is responsible for specifying equipment that meets requirements. The Contractor is responsible for adjusting and testing to meet compliance. The Owner is responsible for ongoing compliance.
      g. ROW/Road Cut Permit.
      h. Traffic Control Plans.
      i. SWCAA Demolition Permit.
      j. Department of Health Permit.
      k. Potable Water Permit.
      l. All permits and fees for plan reviews, permits and inspections required by Fire Marshal (including deferred submittals).
      m. Kitchen Permit (including deferred submittals).
      n. Road Approach Permit.
      o. Road Improvement Permit.
      p. Sign Permit.
      q. Site Structure Permits (covered play structure, flagpole).
      r. Contractor shall secure Health Department approval, pressure vessel permits, elevator permits and all other necessary approvals, permits and/or certificates by governing authorities.
      s. All other permits required during the construction phase to secure the final occupancy permit.
      t. Any permits/fees required by individual specification sections.

C. Shared Responsibilities between Owner and Contractor:
   1. Construction Stormwater General Permit: This is a construction permit issued by the Washington State Department of Ecology (DOE) related to stormwater runoff during construction activities.
      a. Owner Responsibilities:
         1) Submit Notice of Intent (NOI). The notice of intent (NOI) shall be submitted on or before the date of the first public notice, and at least 60 days prior to the discharge of stormwater from construction activities.
         2) Publish the Public Notice.
         3) Provide the Stormwater Pollution Prevention Plan (SWPPP) as required by Special Condition S9 of the permit.
      b. Contractor Responsibilities:
         1) Submit Transfer of Coverage Form (for Complete Transfer) so that the Contractor is identified as the site operator.
         2) Comply with Standards as identified in Special Conditions S3 of permit.
         3) Comply with Monitoring Requirements as identified in special Condition S4 of the permit. Site inspections and monitoring shall be conducted by a Certified Erosion and Sediment Control Lead (CESCL).
         4) Comply with Reporting and Recordkeeping Requirements as identified in special Condition S5 of the permit.
         5) Pay all permit fees (subsequent to the Transfer of Coverage) assessed by the DOE as identified in special Condition S6 of the permit. Permit fees will continue to be assessed until the permit is terminated in accordance with the Notice of Termination requirements.
         6) Comply with other permit requirements as identified in special Conditions S7 and S8 of the permit, as applicable.
         7) Implement and update the Stormwater Pollution Prevention Plan (SWPPP) as required by Special Condition S9 of the permit.
         8) Upon completion of construction and final stabilization of the site, prepare and submit a Notice of Termination (NOT) form in accordance with the requirements of the permit.
         9) Comply with all other requirements of permit coverage, including all General Conditions, as well as any additional requirements imposed by the Department of Ecology related to the permit.
         10) Pay any penalties assessed by the DOE for violation of permit coverage.

1.03 PAYMENTS

A. The Contractor shall be responsible for securing and paying for all permits and fees in a timely manner so not to impede the progress of the Work.

B. Prior to Substantial Completion of the Work, Contractor shall verify that all fees have been paid so not to impede issuance of Occupancy Permit.

END OF SECTION

SECTION 01 42 16
DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

A. This section supplements the definitions contained in the General Conditions.

B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Basis of Design (BOD): Product or system used to establish a particular quality, performance requirement, aesthetic, or other specific attribute for a product or system for the evaluation of any comparable products by other listed acceptable manufacturers as included in this Specification or in an approved Substitution Request as judged by the Design Professional.
   1. If substitutions and/or equivalent equipment/products are being proposed, it is the responsibility of the parties involved in and furnishing the substitutes to verify and compare the characteristics, performance, and requirements of the furnished products or systems to that specified and/or shown.
   2. Drawings are intended to be diagrammatic and reflect the Basis of Design manufacturer's product/equipment. They are not intended to show every item in its exact dimensions, or details of equipment or proposed system's layout. Verify actual dimensions of proposed approved comparable products/equipment to assure that they will fit in available space the same as the Basis of Design products/equipment.

B. Furnish: To supply, deliver, unload, and inspect for damage.

C. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

D. OFCI: Owner Furnished, Contractor Installed.

E. OFOI: Owner Furnished, Owner Installed.

F. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

G. Provide: To furnish and install.

H. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements relating to referenced standards.

1.02 QUALITY ASSURANCE

A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with the reference standard of date of issue specified in this section, except where a specific date is established by applicable code.

C. Obtain copies of standards when required by Contract Documents.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Date of Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by Contract Documents by mention or inference otherwise in any reference document.

PART 2 - NOT USED

PART 3 - NOT USED

END OF SECTION

SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Construction procedures to promote adequate indoor air quality after construction.

1.02 PROJECT GOALS

A. Dust and Airborne Particulates: Prevent deposition of dust and other particulates in HVAC ducts and equipment.
   1. Cleaning of ductwork is not contemplated under this Contract.
   2. Contractor to bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
   3. Establish condition of existing ducts and equipment prior to start of alterations.

B. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
   1. Furnish products meeting the specifications.
   2. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.

1.03 REFERENCE STANDARDS

A. SMACNA (OCC) - IAQ Guidelines for Occupied Buildings Under Construction; 2007.

1.04 DEFINITIONS

A. Adsorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.

B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.

C. Particulates: Dust, dirt, and other airborne solid matter.

D. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Indoor Air Quality Management Plan: Describe, in detail, measures to be taken to promote adequate indoor air quality upon completion; use SMACNA (OCC) as a guide.
   1. Submit not less than 60 days before enclosure of building.
   2. Identify potential sources of odor and dust.
   3. Identify construction activities likely to produce odor or dust.
   4. Identify areas of project potentially affected, especially occupied areas.
   5. Evaluate potential problems by severity and describe methods of control.
   6. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
   7. Describe cleaning and dust control procedures.
   8. Describe coordination with commissioning procedures.
   9. Describe methods by which absorptive materials (installed or stored on site) will be protected from moisture damage during the construction and preoccupancy phases.

C. Interior Finishes Installation Schedule: Identify each interior finish that either generates odors, moisture, or vapors or is susceptible to adsorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.

D. Duct and Terminal Unit Inspection Report.

PART 2 PRODUCTS

2.01 MATERIALS

A. Low VOC Materials: See other sections for specific requirements for materials with low VOC content.

PART 3 EXECUTION

3.01 CONSTRUCTION PROCEDURES

A. Prevent the absorption of moisture and humidity by adsorptive materials by:
   1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
   2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.
   3. Provide sufficient ventilation for drying within reasonable time frame.

B. Begin construction ventilation when building is substantially enclosed.

C. If extremely dusty or dirty work must be conducted inside the building, shut down HVAC systems for the duration; remove dust and dirt completely before restarting systems.

D. When working in a portion of an occupied building, prevent movement of air from construction area to occupied area.

E. Use of HVAC equipment and ductwork for ventilation during construction is not permitted:
   1. Provide temporary ventilation equivalent to 1.5 air changes per hour, minimum.
   2. Exhaust directly to outside.
   3. Seal HVAC air inlets and outlets immediately after duct installation.

F. Do not store construction materials or waste in mechanical or electrical rooms.

G. Prior to use of return air ductwork without intake filters clean up and remove dust and debris generated by construction activities.
   1. Inspect duct intakes, return air grilles, and terminal units for dust. Remove any dust and dirt using a HEPA vacuum.
   2. Clean plenum spaces, including top sides of lay-in ceilings, outsides of ducts, tops of pipes and conduit.
   3. Clean tops of doors and frames.
   4. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
   5. Clean return plenums of air handling units.
   6. Remove intake filters last, after cleaning is complete.

H. Do not perform dusty or dirty work after starting use of return air ducts without intake filters.

I. Use other relevant recommendations of SMACNA (OCC) for avoiding unnecessary contamination due to construction procedures.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations.

F. Procedures for Owner-supplied products.

G. Maintenance materials, including extra materials, spare parts, tools, and software.

H. Product warranties.

1.02 REFERENCE STANDARDS

A. 16 CFR 260.13 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; Recycled Content; Current Edition.

B. C2C (DIR) - C2C Certified Products Registry; Cradle to Cradle Products Innovation Institute; Current Edition.

C. EN 15804 - Sustainability of Construction Works - Environmental Product Declarations - Core Rules for the Product Category of Construction Products; 2022 (Corrigendum 2021).

D. ISO 14025 - Environmental Labels and Declarations - Type III Environmental Declarations - Principles and Procedures; 2006.

E. ISO 14040 - Environmental Management - Life Cycle Assessment - Principles and Framework; 2006, with Amendment (2020).

F. ISO 14044 - Environmental Management - Life Cycle Assessment - Requirements and Guidelines; 2006, with Amendment (2020).

G. ISO 21930 - Sustainability in Buildings and Civil Engineering Works — Core Rules for Environmental Product Declarations of Construction Products and Services; 2017.

1.03 SUBMITTALS

A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit within 30 days after date of Agreement.
   2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

1.04 QUALITY ASSURANCE DEFINITIONS

A. Cradle-to-Cradle Certified: End use product certified Cradle-to-Cradle v2 Basic or Cradle-to-Cradle v3 Bronze, minimum, as evidenced by C2C (DIR).

B. Environmental Product Declaration (EPD): Publicly available, critically reviewed life cycle analysis having at least a cradle-to-gate scope.
   1. Good: Product-specific; compliant with ISO 14044.
   2. Better: Industry-wide, generic; compliant with ISO 21930, or with ISO 14044, ISO 14040, ISO 14025, and EN 15804; Type III third-party certification with external verification, in which the manufacturer is recognized as the program operator.
   3. Best: Commercial-product-specific; compliant with ISO 21930, or with ISO 14044, ISO 14040, ISO 14025, and EN 15804; Type III third-party certification with external verification, in which the manufacturer is recognized as the program operator.
   4. Where demonstration of impact reduction below industry average is required, submit both industry-wide and commercial-product-specific declarations; or submit at least 5 declarations for products of the same type by other manufacturers in the same industry.

C. Health Product Declarations (HPD): Complete, published declaration with full disclosure of known hazards, prepared using one of the HPDC (HPD-OLT) online tools.

D. Recycled Content: Determine percentage of post-consumer and pre-consumer (post-industrial) content separately, using the guidelines contained in 16 CFR 260.13.
   1. Previously used, reused, refurbished, and salvaged products are not considered recycled.
   2. Wood fabricated from timber abandoned in transit to original mill is considered reused, not recycled.
   3. Determine percentage of recycled content of any item by dividing the weight of recycled content in the item by the total weight of materials in the item.
   4. Determine value of recycled content of each item separately, by multiplying the content percentage by the value of the item.
   5. Acceptable Evidence:
      a. For percentage of recycled content, information from manufacturer.
      b. For cost, Contractor's cost data.

E. Regional Materials: Materials that are extracted, harvested, recovered, and manufactured within a radius of 100 miles from the Project site.

F. Source Location: Location of harvest, extraction, recovery, or manufacture; where information about source location is required to be submitted, give the postal address:
   1. In every case, indicate the location of final assembly.
   2. For harvested products, indicate location of harvest.
   3. For extracted (i.e. mined) products, indicate location of extraction.
   4. For recovered products, indicate location of recovery.
   5. For products involving multiple manufacturing steps, provide a description of the process at each step, with location.
   6. Acceptable Evidence:
      a. Manufacturer's certification.
      b. Life cycle analysis (LCA) performed by third-party.

G. Sustainably Harvested Wood: Solid wood, wood chips, and wood fiber certified or labeled by an organization accredited by one of the following:
   1. The Forest Stewardship Council, The Principles for Natural Forest Management; for Canada visit http://www.fsccanada.org, for the USA visit http://www.fscus.org.
   2. Acceptable Evidence: Copies of invoices bearing the certifying organization's certification numbers.

1.05 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of Contract Documents.
   1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
   2. Special Warranty: Written warranty required by Contract Documents to provide specific rights for Owner.
   3. The Contractor is not relieved from delivering to the Owner warranties of longer duration if these are industry-accepted standards,

B. Special Warranties: Prepare written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with Specifications, prepare written document using indicated form properly executed.
   3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 70 00 - Execution and Closeout Requirements and individual technical sections of the Specifications.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

D. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is required.
   1. See Section 01 10 00 for list of items required to be salvaged for reuse and relocation.
   2. If reuse of other existing materials or equipment is desired, submit substitution request.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:
   1. Made using or containing CFC's, HFC's, or HCFC's.
   2. Made of wood from newly cut old growth timber.
   3. Containing lead, cadmium, asbestos, or any other listed hazardous materials.

C. Where other criteria are met, Contractor shall give preference to products that:
   1. If used on interior, have lower emissions, as defined in Section 01 61 16.
   2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
   3. Are extracted, harvested, and/or manufactured closer to the location of the project.
   4. Have longer documented life span under normal use.
   5. Result in less construction waste. See Section 01 74 19.
   6. Are made of vegetable materials that are rapidly renewable.
   7. Are made of recycled materials.

8. If made of wood, are made of sustainably harvested wood, wood chips, or wood fiber.
9. If bio-based, other than wood, are or are made of Sustainable Agriculture Network certified products.
10. Are Cradle-to-Cradle Certified.
11. Have a published Environmental Product Declaration (EPD).
12. Have a published Health Product Declaration (HPD).

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 25 00 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

A. Owner's Responsibilities:
1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
2. Arrange and pay for product delivery to site.
3. On delivery, inspect products jointly with Contractor.
4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
1. Review Owner reviewed shop drawings, product data, and samples.
2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

A. Provide protection of stored materials and products against theft, casualty, or deterioration.

B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
   1. Structural Loading Limitations: Handle and store products and materials so as not to exceed static and dynamic load-bearing capacities of project floor and roof areas.

C. Store and protect products in accordance with manufacturers' instructions.

D. Store with seals and labels intact and legible.

E. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

F. For exterior storage of fabricated products, place on sloped supports above ground.

G. Provide off-site storage and protection when site does not permit on-site storage or protection.
   1. Execute a formal supplemental agreement between Owner and Contractor allowing off-site storage.

H. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

I. Comply with manufacturer's warranty conditions, if any.

J. Do not store products directly on the ground.

K. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

L. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

M. Prevent contact with material that may cause corrosion, discoloration, or staining.

N. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

O. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 61 16
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

C. Requirement for installer certification that they did not use any non-compliant products.

1.02 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
   1. Composite wood.

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.

C. Interior of Building: Anywhere inside the exterior weather barrier.

D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

E. Composite Wood Products: Particleboard, medium density fiberboard, plywood, wheatboard, strawboard, panel substrates, and door cores.

F. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

G. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).

C. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; Current Edition.

D. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2020.

E. SCAQMD 1113 - Architectural Coatings; 1977, with Amendment (2016).

F. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

G. SCS (CPD) - SCS Certified Products; Current Edition.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: For each Indoor-Emissions-restricted product and each VOC-Content-restricted product used in the project, submit evidence of compliance.

C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.05 QUALITY ASSURANCE

A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.

B. Composite Wood Emissions Standard: CARB (ATCM) for ultra-low emitting formaldehyde (ULEF) resins.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Current SCS "No Added Formaldehyde (NAF)" certification; www.scscertified.com.
      b. Report of laboratory testing performed in accordance with requirements.
      c. Published product data showing compliance with requirements.
      d. Certification by manufacturer that product complies with requirements.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
   1. Composite Wood, Wood Fiber, and Wood Chip Products: Comply with Composite Wood Emissions Standard or contain no added formaldehyde resins.
   2. Inherently Non-Emitting Materials.

C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
   2. Joint Sealants: SCAQMD 1168 Rule.
   3. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations Work, including selective demolition.

C. Substantial Completion.

D. Pre-installation meetings.

E. Cutting and patching.

F. Surveying for laying out the Work.

G. Cleaning and protection.

H. Starting of systems and equipment.

I. Demonstration and instruction of Owner personnel.

J. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. See Section 01 78 00 - Closeout Submittals for closeout submittal requirements.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

A. For surveying Work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

B. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of Work and licensed in the State in which the Project is located.

1.05 PROJECT CONDITIONS

A. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute Work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

D. Erosion and Sediment Control: Plan and execute Work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

E. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
1. Outdoors: Limit conduct of especially noisy exterior Work to the hours of 8 am to 5 pm or as permitted by the AHJ.

1.06 COORDINATION

A. See Section 01 10 00, Summary of Work for occupancy-related requirements.

B. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate Work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electrical Work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of Work of separate sections.

H. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.07 QUALITY ASSURANCE

A. Prior to requesting an inspection by the Architect, the Contractor shall use adequate means to assure that the Work is completed by every Subcontractor in accordance with the specified requirements and is ready for the requested inspection. If the quality of the completed Work is obviously below acceptable standards, the Architect may refuse the inspection until the Subcontractors complete their own inspection and correct the Work.

1.08 SUBSTANTIAL COMPLETION

A. See modified AIA Document A201 - General Conditions of the Contract for Construction.

B. Prior to requesting determination of completion, Contractor shall submit comprehensive list of items to be completed or corrected.

C. Notify the Architect in writing when the project is ready for Substantial Completion Inspection.

D. Contractor shall be responsible to secure the occupancy permit from the building department prior to scheduled occupancy.

E. Complete final start-up, testing and commence instruction/training on all major building systems including HVAC and controls, intercom, data, fire alarm, telephone, fire sprinkler, security, and clocks.

F. Make final changeover of locks and transmit keys to Owner. Final keying by Owner.

G. Advise Owner on coordination of shifting insurance coverages.

H. The Architect will inspect to determine status of completion. The Architect may, if noting an inordinate number of deficiencies, postpone the inspection until further effort improves the quality of the Work.

I. Should the Architect determine that the Work is not substantially complete:
   1. The Architect will promptly notify the Contractor in writing, giving the reasons thereof.
   2. The Contractor will remedy the deficiencies, and notify the Architect when ready for re-inspection.

J. When the Architect concurs that the Work is substantially complete:
   1. The Architect will prepare a “punch list” noting deficiencies in the quality of the Work.
   2. The Architect will prepare a “Certificate of Substantial Completion”, accompanied by the punch list.
   3. The Architect will submit the Certificate to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and Work for patching and extending Work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing Work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Start of Work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching. After uncovering existing Work, assess conditions affecting performance of Work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing Work of the section.

B. Require attendance of parties directly affecting, or affected by, Work of the specific section.

C. Notify Architect four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related Work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting Work.

B. Promptly notify Architect of any discrepancies discovered.

C. Contractor to locate and protect survey control and reference points.

D. Control datum for survey is that established by Owner provided survey.

E. Protect survey control points prior to starting site Work; preserve permanent reference points during construction.

F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

H. Utilize recognized engineering survey practices.

I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.

J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

K. Periodically verify layouts by same means.

L. Maintain a complete and accurate log of control and survey Work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.

B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations Work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00, Temporary Facilities and Controls in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
   1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
   2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations Work.

D. Remove existing Work as indicated and as required to accomplish new Work.
   1. Remove items indicated on drawings.
   2. Relocate items indicated on drawings.
   3. Where new surface finishes are to be applied to existing Work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
   3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
      a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
      b. Provide temporary connections as required to maintain existing systems in service.
   4. Verify that abandoned services serve only abandoned facilities.
   5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect existing Work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new Work.
   3. Repair adjacent construction and finishes damaged during removal Work.

G. Adapt existing Work to fit new Work: Make as neat and smooth transition as possible.
   1. When existing finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
   2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
   3. Where a change of plane of 1/4 inch or more occurs in existing Work, submit recommendation for providing a smooth transition for Architect review and request instructions.

4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as indicated:
   1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
   2. If mechanical or electrical Work is exposed accidentally during the Work, re-cover and refinish to match.

J. Clean existing systems and equipment.

K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

L. Do not begin new construction in alterations areas before demolition is complete.

M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

A. Whenever possible, execute the Work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
   1. Complete the Work.
   2. Fit products together to integrate with other Work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match Work that has been cut to adjacent Work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new Work damaged by subsequent Work.
   7. Remove samples of installed Work for testing when requested.
   8. Remove and replace defective and non-complying Work.

D. Execute Work by methods that avoid damage to other Work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore Work with new products in accordance with requirements of Contract Documents.

H. Fit Work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

J. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching Work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 CLEANING - GENERAL

A. Materials:
   1. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
   2. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
   3. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
   4. Submit a list of all cleaning products proposed to be used on site for review by Architect prior to commencing cleaning operations.

3.09 PROGRESS CLEANING

A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site regularly and dispose of at legal disposal areas away from the site.

D. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

E. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

F. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

G. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

H. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.10 PROTECTION OF INSTALLED WORK

A. Protect installed Work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Protect Work from spilled liquids. If Work is exposed to spilled liquids, immediately remove protective coverings, dry out Work, and replace protective coverings.

G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Prohibit traffic from landscaped areas.

I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.11 SYSTEM STARTUP

A. Coordinate with requirements of Section 01 91 13 - General Commissioning Requirements, and related specification sections.

B. Coordinate schedule for start-up of various equipment and systems.

C. Notify Architect and Owner seven days prior to start-up of each item.

D. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

E. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

F. Verify that wiring and support components for equipment are complete and tested.

G. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

H. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

I. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.12 DEMONSTRATION AND INSTRUCTION

A. See Section 01 79 00 - Demonstration and Training.

3.13 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.14 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

B. Employ skilled Workers for final cleaning.

C. Use cleaning materials that are nonhazardous.

D. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

E. Ventilating systems:
   1. Clean permanent filters and replace disposable filters if units were operated during construction.
   2. Clean ducts, blowers and coils if units were operated without filters during construction.

F. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

G. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

H. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

I. Clean filters of operating equipment.

J. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

K. Clean site; sweep paved areas, rake clean landscaped surfaces.

L. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

M. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all Work areas, to verify that the entire Work is clean.

N. Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interior and final cleaning of the occupied spaces shall be as determined by the Architect in accordance with the General Conditions of the Contract.

3.15 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect and Owner.

B. Notify Architect when Work is considered ready for Architect's Substantial Completion inspection.

C. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

D. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

E. Correct items of Work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

F. Notify Architect when Work is considered finally complete and ready for Architect's Substantial Completion final inspection.

G. Complete items of Work determined by Architect listed in executed Certificate of Substantial Completion.

3.16 WARRANTY

A. Reference: The General Conditions of the Contract for Construction.

B. Provide all required warranties as outlined in the General Conditions of the Contract for Construction, Division 01 Administrative Requirements and individual technical spec sections.

C. Prior to expiration of the one year warranty on all Work, the Architect and Owner will conduct an inspection and survey to notify the Contractor of any items for corrective action.

3.17 FINAL COMPLETION

A. Contractor to submit final closeout documentation.

B. Submit a final statement of accounting to the Architect, showing all adjustments to the Contract sum. If so required, the Architect will prepare a final Change Order showing adjustments to the Contract sum, which were not made previously by Change Order.

C. Contractor will notify Architect of final completion.

D. The Architect will inspect to verify status of completion.

E. Should the Architect determine that the Work is incomplete or defective:
   1. The Architect will notify the Contractor, in writing, listing the incomplete or defective Work.
   2. The Contractor will remedy the deficiencies promptly, and notify the Architect when ready for re-inspection.

F. When the Architect determines the project is complete, Architect will prepare letter of final completion.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

B. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

C. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
   1. Aluminum and plastic beverage containers.
   2. Corrugated cardboard.
   3. Wood pallets.
   4. Clean dimensional wood: May be used as blocking or furring.
   5. Concrete: May be crushed and used as riprap, aggregate, sub-base material, or fill.
   6. Bricks: May be used on project if whole, or crushed and used as landscape cover, sub-base material, or fill.
   7. Concrete masonry units: May be used on project if whole, or crushed and used as sub-base material or fill.
   8. Asphalt paving: May be recycled into paving for project.
   9. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
   10. Glass.
   11. Gypsum drywall and plaster.
   12. Plastic buckets.
   13. Paint.
   14. Plastic sheeting.
   15. Rigid foam insulation.
   16. Windows, doors, and door hardware.
   17. Plumbing fixtures.
   18. Mechanical and electrical equipment.
   19. Fluorescent lamps (light bulbs).
   20. Acoustical ceiling tile and panels.
   21. Insulation.
   22. Packing materials.
   23. Paper and paper products.

D. Contractor Reporting Responsibilities: Submit periodic Waste Disposal Reports; report landfill disposal, incineration, recycling, salvage, and reuse regardless of to whom the cost or savings accrues; use the same units of measure on required reports.

E. Develop and follow a Waste Management Plan designed to implement these requirements.

F. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

G. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Submit Waste Management Plan within 30 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.

C. Waste Management Plan: Include the following information:
   1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
   2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
   3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
   4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.

5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

D. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Submit Report on a form acceptable to Owner.
3. Landfill Disposal: Include the following information:
    a. Identification of material.
    b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
    c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
    d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
    a. Identification of material.
    b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
    c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
    d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following information for each:
    a. Identification of material, including those retrieved by installer for use on other projects.
    b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
    c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
    d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
    e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: Include the following information for each:
    a. Identification of material and how it was used in the project.
    b. Amount, in tons or cubic yards.
    c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

E. Final Waste Disposal Report: Before request for Substantial Completion, submit the Final Waste Disposal Report for waste generated at the Project. Include the total amount of waste, recycled, and salvaged materials and the overall diversion rate for the project in tons or cubic yards.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Prebid meeting.
   2. Preconstruction meeting.
   3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. Provide containers as required.
   2. Locate enclosures out of the way of construction traffic.
   3. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   4. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.

B. Operation and maintenance data.

C. Warranties and bonds.

D. Sustainable design data.

1.02 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

D. Sustainable Design Data:
   1. As required by individual sections: Specific requirements for sustainable design data.

E. Occupancy Certificates / Approvals:
   1. Building Department.
   2. Fire Marshal.
   3. Electrical (Labor and Industry).

F. WSEC Compliance Documentation: Completed energy code compliance forms and calculations, including lighting power compliance path report.

G. Certificate of Substantial Completion.

H. Certificate of Final Completion.

I. Final Change Order.

J. Extra materials and spare parts delivered to Owner in boxes that are substantial and in good condition. Mark boxes with building name and number and room number. Obtain a receipt when delivered to Owner.

K. Building keys returned with key schedule and receipt of delivery to Owner.

L. Affidavits:
   1. Consent of Surety to Final Payment.

2. Affidavit of Payment of Debts and Claims.
3. Affidavit of Prevailing Wages Paid.
4. Affidavit of Release of Liens.

M. Final Payment Application.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish first floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
1. Product data, with catalog number, size, composition, and color and texture designations.
2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Include color coded wiring diagrams as installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

G. Provide servicing and lubrication schedule, and list of lubricants required.

H. Include manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by controls manufacturer.

J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Provide control diagrams by controls manufacturer as installed.

L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

N. Include test and balancing reports.

O. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS - ELECTRONIC FORMAT

A. Provide all operation and maintenance data in electronic PDF file format. Provide files on a flash drive or other physical device for use by Owner's personnel.

B. Arrange data in the same sequence as, and identified by, the specifications sections.

C. Where systems involve more than one specification section, provide separate folders for each system.

D. Project Directory: Title and address of Project; names, addresses and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

E. Tables of Contents: List every item separated by folder, using the same identification as the folder name.

F. Create a file structure for electronic files with each individual folder and file labeled and bookmarked for ease of use.
   1. See example file structure at the end of this section.

G. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source Data.
      b. Product data, shop drawings, and other submittals.
      c. Operation and maintenance data.
      d. Field quality control data.
      e. Copies of warranties and bonds.

H. In addition to electronic PDF files, provide two hard copies of all operation and maintenance data. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

I. Where systems involve more than one specification section, provide separate tabbed divider for each system.

J. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

K. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

L. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

M. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

N. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

O. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

P. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

Q. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Product data, shop drawings, and other submittals.
      c. Operation and maintenance data.
      d. Field quality control data.
      e. Original warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. Electrical systems and equipment.
   3. Items specified in individual product Sections.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
   1. Submit to Architect for transmittal to Owner.
   2. Submit not less than four weeks prior to start of training.
   3. Revise and resubmit until acceptable.
   4. Provide an overall schedule showing all training sessions.
   5. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of products and/or systems to be covered.
      c. Name of firm and person conducting training; include qualifications.
      d. Intended audience, such as job description.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
      g. Media to be used, such a slides, hand-outs, etc.
      h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

D. Training Reports:
   1. Identification of each training session, date, time, and duration.
   2. Sign-in sheet showing names and job titles of attendees.
   3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.

E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
   1. Begin each video with a standard introduction of date, project name, title of training being performed and name/company/contact information of person performing training.
   2. Format: DVD Disc.
   3. Label each disc and container with session identification and date.

1.03 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those Contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstration may be combined with Owner personnel training if applicable.

C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Owner will provide classroom and seating at no cost to Contractor.

C. The Contractor will instruct the Owner' s personnel in proper operation and maintenance of systems, equipment, and similar items which were provided as part of the Work.

D. Provide training in minimum two hour segments.

E. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

F. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

G. General Operating and Maintenance Instructions: Arrange for each installer of operating equipment and other Work that requires regular or continuing maintenance, to meet at the site with the Owner’s personnel to provide necessary basic instruction in the proper operation and maintenance of the entire Work. Where installers are not experience in the required procedures, include instruction by the manufacturer’s representatives. Training sessions to be scheduled within seven days notice with submittal of proposed agenda. All participants sign in. No more than four hours in one day.
   1. As part of this instruction provide a detailed review of the following items:
      a. Maintenance manuals.

b. Record documents.
c. Spare parts and materials.
d. Tools.
e. Lubricants.
f. Fuels.
g. Identification systems.
h. Control sequences.
i. Trouble shooting.
j. Hazards.
k. Cleaning.
l. Warranties bonds, maintenance agreements, and similar continuing commitments.

2. As part of this instruction for operating equipment demonstrate the following procedures:
   a. Start-up.
   b. Shut-down.
   c. Emergency operations.
   d. Noise and vibration adjustments.
   e. Safety procedures.
   f. Economy and efficiency adjustments.
   g. Effective energy utilization.

H. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.
   10. Review spare parts and tools required to be furnished by Contractor.
   11. Review spare parts suppliers and sources and procurement procedures.

I. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

C. Abandonment in place of existing utilities and utility structures.

1.02 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Site Plan: Indicate:
   1. Vegetation to be protected.
   2. Areas for temporary placement of removed materials.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 DEMOLITION

A. Perform demolition work required for the execution and completion of this Contract, as shown on the Drawings or specified, to make project complete and operable. This pertains to exterior and interior demolition required for a complete project.

B. Remove paving and curbs required to accomplish new work.

C. Remove concrete slabs on grade as indicated on drawings.

D. Remove and protect other items indicated, for salvage and relocation.

E. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with requirements in Section 01 70 00.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   6. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.

7. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Do not begin removal until built elements to be salvaged or relocated have been removed.

E. Do not begin removal until vegetation to be relocated has been removed and vegetation to remain has been protected from damage.

F. Protect existing structures and other elements to remain in place and not removed.
1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

G. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

H. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
1. Verify construction and utility arrangements are as indicated.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from areas that remain occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

D. Remove existing work as indicated and required to accomplish new work.
1. Remove items indicated on drawings.

E. Services including, but not limited to, Plumbing and Electrical: Remove existing systems and equipment as indicated.
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
   1. Prevent movement of structure. Provide shoring and bracing as required.
   2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch to match new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

3.06 SALVAGE AND REUSE

A. Certain items are specifically noted on the Drawings for reuse. These items will be handled with care, both in removal and reinstallation.

B. Coordinate all salvage items with the Owner. Those items indicated to be removed by the Owner shall be coordinated between the Owner and the Contractor to allow the Owner sufficient time to do the work.

END OF SECTION

SECTION 03 01 00
MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cleaning of existing concrete surfaces.

B. Resurfacing of concrete surfaces having spalled areas and other damage.

C. Repair of deteriorated concrete.

D. Repair of internal concrete reinforcement.

E. Repair and strengthening of concrete with applied composite materials.

F. Scope of Work: As indicated on drawings.

1.02 REFERENCE STANDARDS

A. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

B. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

C. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.

D. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2021.

E. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

F. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.

G. ASTM C928/C928M - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs; 2020a.

H. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2021.

I. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.

C. Manufacturer's instructions.

D. Field quality control submittals.

E. Manufacturer's qualification statement.

F. Cleaner's qualification statement.

G. Installer's qualification statement.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Cleaner Qualifications: Company specializing in, and with minimum of 3 years of experience in, the type of cleaning specified.

C. Installer Qualifications: Company specializing in performing work of the type specified and with minimum of 3 years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturers' instructions for storage, shelf life limitations, and handling of products.

B. Deliver polymer resin materials in original factory-sealed containers with manufacturer's labels intact and legible. Verify product nomenclature, manufacturer's name, product identification, batch number, date of manufacture, and shelf life or expiration date. Do not use polymer resin materials that have exceeded shelf life.

C. Store materials in covered, well-ventilated area and according to manufacturer's written storage instructions. Store polymer resins and hardeners separate from construction materials that can absorb odors.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

A. Degreaser:
   1. Manufacturers:
      a. Euclid Chemical Company; Euco Clean and Strip: www.euclidchemical.com/#sle.
      b. LATICRETE International, Inc; CITREX: www.laticrete.com/#sle.
      c. Nox-Crete, Inc; Bio-Clean Plus: www.nox-crete.com/#sle.
      d. SpecChem, LLC; Orange Peel-Citrus Cleaner: www.specchemllc.com/#sle.
      e. United Gilsonite Laboratories; DRYLOCK Concrete Cleaner and Degreaser: www.ugl.com.
      f. Substitutions: See Section 01 60 00 - Product Requirements.

B. Detergent: Non-ionic detergent.

C. Alkaline Cleaning Agent:

D. Acidic Cleaning Agent:
   1. Manufacturers:
      a. United Gilsonite Laboratories; DRYLOK® Concrete and Masonry Etch and Cleaner: www.ugl.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

E. Strippers and Cleaners for Removal of Existing Coatings:
   1. Manufacturers:
      a. Nox-Crete, Inc; Deco-Strip Series: www.nox-crete.com.
      b. Nox-Crete, Inc; Deco-Peel Series: www.nox-crete.com.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

A. Manufacturers:
   1. Adhesives Technology Corporation: www.atcepoxy.com/#sle.
   2. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
   3. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
   4. Euclid Chemical Company: www.euclidchemical.com/#sle.
   5. Master Builders Solutions: www.master-builders-solutions.com/en-us/#sle.
   6. The QUIKRETE Companies: www.quikrete.com/#sle.
   7. SpecChem, LLC: www.specchemllc.com/#sle.
   8. W. R. Meadows, Inc: www.wrmeadows.com/#sle.
   9. Substitutions: See Section 01 60 00 - Product Requirements.

B. Bonding Slurry: Water-based latex admixture; comply with ASTM C1059/C1059M, combined with Portland cement and sand in accordance with admixture manufacturer's instructions.
   1. Admixture Manufacturers:
      a. Dayton Superior Corporation: www.daytonsuperior.com/#sle.

b. Euclid Chemical Company; AKKRO-7T: www.euclidchemical.com/#sle.
c. SpecChem, LLC; Strong Bond - Acrylic Bonder: www.specchemllc.com/#sle.
d. W. R. Meadows, Inc; Acry-lok: www.wrmeadows.com/#sle.
e. Substitutions: See Section 01 60 00 - Product Requirements.

C. Cementitious Resurfacing Mortar: One- or two-component, factory-mixed, polymer-modified cementitious mortar designed for continuous thin-coat application.
1. In-place material resistant to freeze/thaw conditions.
2. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
3. Integral corrosion inhibitor.
4. Color: Gray.
5. Manufacturers:
a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com/#sle.
b. Euclid Chemical Company; THIN TOP SUPREME: www.euclidchemical.com/#sle.
c. Master Builders Solutions; MasterEmaco T 1061: www.master-builders-solutions.com/en-us/#sle.
d. SpecChem, LLC: Duo Patch: www.specchemllc.com/#sle.
e. SpecChem, LLC: RevCrete: www.specchemllc.com/#sle.
f. SpecChem, LLC: Final Finish: www.specchemllc.com/#sle.
g. W. R. Meadows, Inc; Meadow-Patch T2: www.wrmeadows.com/#sle.
h. W. R. Meadows, Inc; Parge-All AF: www.wrmeadows.com/#sle.
i. Substitutions: See Section 01 60 00 - Product Requirements.

D. Exterior Cementitious Repair Mortar, Trowel Grade: One- or two-component, factory-mixed, polymer-modified cementitious mortar.
1. In-place material resistant to freezing conditions.
2. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
3. Dry Material: Complies with ASTM C928/C928M.
4. Integral corrosion inhibitor.
5. Manufacturers:
a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com/#sle.
b. Euclid Chemical Company; EXPRESS REPAIR: www.euclidchemical.com/#sle.
c. Master Builders Solutions; MasterEmaco T 1060: www.master-builders-solutions.com/en-us/#sle.
d. SpecChem, LLC; OverCrete: www.specchemllc.com/#sle.
e. SpecChem, LLC; RepCon V/O: www.specchemllc.com/#sle.
f. SpecChem, LLC; SpecPatch: www.specchemllc.com/#sle.
g. SpecChem, LLC; Duo Patch: www.specchemllc.com/#sle.
h. W. R. Meadows, Inc; Meadow-Patch T1, Meadow-Patch T2, Meadow-Patch 5, or Meadow-Patch 20: www.wrmeadows.com/#sle.
i. W. R. Meadows, Inc; Meadow-Crete GPS: www.wrmeadows.com/#sle.
j. Substitutions: See Section 01 60 00 - Product Requirements.

E. Exxterior Cementitious Repair Mortar, Form and Pour/Pump Grade: Flowable, one- or two-component, factory-mixed, polymer-modified cementitious mortar; in-place material resistant to freezing conditions.
1. Mixed with water in proportions as recommended by manufacturer.
2. Integral corrosion inhibitor.
3. Manufacturers:

a. Master Builders Solutions; MasterEmaco S 440: www.master-builders-solutions.com/en-us/#sle.
b. SpecChem, LLC; RepCon H-350; www.specchemllc.com/#sle.
c. W. R. Meadows, Inc; Meadow-Crete FNP: www.wrmeadows.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

F. Exterior Self-Leveling Concrete Topping: Portland cement-based; suitable as wear surface topping in exterior and wet locations as well as underlayment for applied materials.
1. Compressive Strength: 4300 pounds per square inch, minimum, at 28 days, when tested in accordance with ASTM C109/C109M, air cured.
2. Flexural Strength: 1000 pounds per square inch, minimum, at 28 days, when tested in accordance with ASTM C348.
3. Manufacturers:
a. ARDEX Engineered Cements; ARDEX K301: www.ardexamericas.com/#sle.
b. Substitutions: See Section 01 60 00 - Product Requirements.

G. Pre-Blended Concrete Mix for Small Projects: Construction-grade Portland cement uniformly blended with aggregates and other approved concrete ingredients, requiring only the addition of water.
1. Compressive Strength: 5000 pounds per square inch, minimum, at 28 days, when tested in accordance with ASTM C39/C39M.

2.03 EPOXY PATCHING AND REPAIR MATERIALS

A. Manufacturers:
1. Euclid Chemical Company: www.euclidchemical.com/#sle.
2. SpecChem, LLC: www.specchemllc.com/#sle.
3. W. R. Meadows, Inc: www.wrmeadows.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Epoxy Repair Mortar: Epoxy resin mixed with aggregate and other materials in accordance with manufacturer's instructions for purpose intended; comply with pot life and workability limits.
1. Manufacturers:
a. ARDEX Engineered Cements; ARDEX BACA: www.ardexamericas.com/#sle.
b. Euclid Chemical Company; DURALFLEX FASTPATCH: www.euclidchemical.com/#sle.
c. Rust-Oleum Corporation; TurboKrete Concrete Patching Compound: www.rustoleum.com/#sle.
d. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000 or SpecPoxy 3000 FS: www.specchemllc.com/#sle.
e. W. R. Meadows, Inc; Rezi-Weld Gel Paste, Rezi-Weld Gel Paste State, Rezi-Weld 1000, Rezi-Weld LV, or Rezi-Weld LV State: www.wrmeadows.com/#sle.
f. Substitutions: See Section 01 60 00 - Product Requirements.

C. Epoxy Injection Adhesive:
1. Manufacturers:
a. Dayton Superior Corporation; Sure Inject J56: www.daytonsuperior.com/#sle.
b. Euclid Chemical Company; DURAL FAST SET LV: www.euclidchemical.com/#sle.
c. Kaufman Products Inc; SurePoxy HM, SurePoxy HMLV, SurePoxy HMLV Class B, or SurePoxy HMSLV: www.kaufmanproducts.net/#sle.
d. SpecChem, LLC; SpecPoxy 1000; www.specchemllc.com/#sle.
e. W. R. Meadows, Inc; Rezi-Weld LV, Rezi-Weld LV State, Rezi-Weld (IP), or Rezi-Weld Gel Paste: www.wrmeadows.com/#sle.
f. Substitutions: See Section 01 60 00 - Product Requirements.

D. Epoxy Bonding Adhesive: Non-sag, two-component, 100 percent solids; recommended by manufacturer for purpose and conditions under which used.

1. Non-Load-Bearing Applications: ASTM C881/C881M, Type I, II, III, IV, or V, whichever is appropriate to application.
2. Load-Bearing Applications: ASTM C881/C881M, Type IV or V, whichever is appropriate to application.
3. Other Applications: ASTM C881/C881M, Type as appropriate to application.
4. Manufacturers:
   a. ARDEX Engineered Cements; ARDEX BACA: www.ardexamericas.com/#sle.
   b. Adhesives Technology Corporation; Crackbond LR-321: www.atcepoxy.com.
   c. Dayton Superior Corporation; Sure Bond J58: www.daytonsuperior.com/#sle.
   d. Euclid Chemical Company; DURAL FAST SET LV: www.euclidchemical.com/#sle.
   e. Kaufman Products Inc; SurePoxy HM Gel: www.kaufmanproducts.net/#sle.
   f. SpecChem, LLC; SpecPoxy 2000: www.specchemllc.com/#sle.
   g. W. R. Meadows, Inc; Rezi-Weld Gel Paste: www.wrmeadows.com/#sle.
   h. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

A. Anchoring Adhesive: Self-leveling or non-sag as applicable.
   1. Self-Leveling Polyester-Based Products:
      a. W. R. Meadows, Inc; Poly-Grip: www.wrmeadows.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Self-Leveling Epoxy Products:
      a. Euclid Chemical Company; DURAL FAST SET LV: www.euclidchemical.com/#sle.
      b. SpecChem, LLC; SpecPoxy 2000; www.specchemllc.com/#sle.
      c. W. R. Meadows, Inc; Rezi-Weld 1000, Rezi-Weld (IP) or Rezi-Weld 3/2: www.wrmeadows.com.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

B. Portland Cement: ASTM C150/C150M, Type II, grey.

C. Sand: ASTM C33/C33M or ASTM C404; uniformly graded, clean.

D. Water: Clean and potable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

A. Prepare concrete surfaces to be repaired according to ICRI 310.2R.

3.03 CLEANING EXISTING CONCRETE

A. Provide enclosures, barricades, and other temporary construction as required to protect adjacent work from damage.

B. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.
   1. Try the gentlest method first, then, if not clean enough, use a less gentle method taking care to watch for impending damage.
   2. Clean out cracks and voids using same methods.

C. The following are acceptable cleaning methods, in order from gentlest to less gentle:
   1. Water washing using low-pressure, maximum of 100 psi, and, if necessary, brushes with natural or synthetic bristles.
   2. Increasing the water washing pressure to maximum of 400 psi.
   3. Adding detergent to washing water; with final water rinse to remove residual detergent.

4. Steam-generated low-pressure hot-water washing.
5. Alkaline cleaning agent applied for the least amount of time that is effective, followed by slight acid rinse and water rinse.
6. Acidic cleaning agent applied for the least amount of time that is effective, followed by water rinse. Test acidic cleaning agents on mock-up surfaces prior to use.
7. Abrasive blasting: Use only abrasive media that have been proven not to damage concrete by testing on mock-up.

D. Do not use any of the following cleaning methods, unless otherwise indicated:
1. Brushes with wire bristles, grinding with abrasives, solvents, hydrochloric or muriatic acid, sodium hydroxide, caustic soda, or lye.
2. Soap or detergent that is not non-ionic.

3.04 CONCRETE STRUCTURAL MEMBER REPAIR

A. See drawings for specific areas to be repaired.

B. Remove broken and soft concrete at least 1/4 inch deep.

C. Mechanically cut away damaged portions of reinforcement.

D. Remove corrosion from steel and clean mechanically.

E. Follow repair product manufacturer's written installation instructions.

F. Cover exposed steel reinforcement with epoxy mortar.

G. Work epoxy mortar into broken surface and build up patch to match original.

H. Feather edges of repairs flush to sound surface and trowel surface to match surrounding area.

3.05 CRACK REPAIR USING EPOXY ADHESIVE INJECTION

A. Repair exposed cracks.

B. Follow epoxy adhesive manufacturer's written installation instructions.

C. Provide temporary entry ports spaced to accomplish movement of fluids between ports; no deeper than the depth of the crack to be filled or port size diameter no greater than the thickness of the crack. Provide temporary seal at concrete surface to prevent leakage of adhesive.

D. Inject adhesive into ports under pressure using equipment appropriate for particular application.

E. Begin injection at lower entry port and continue until adhesive appears in adjacent entry port. Continue from port to port until entire crack is filled.

F. Remove temporary seal and excess adhesive.

G. Clean surfaces adjacent to repair and blend finish.

3.06 CONCRETE SURFACE REPAIR USING CEMENTITIOUS MATERIALS

A. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.

B. Follow bonding agent and repair mortar manufacturer's written installation instructions.

C. Apply coating of bonding agent to entire concrete surface to be repaired.

D. Fill voids with cementitious mortar flush with surface.

E. Apply repair mortar by steel trowel to a minimum thickness of 1/4 inch over entire surface, terminating at a vertical change in plane on all sides.

F. Trowel finish to match adjacent concrete surfaces.

G. Damp cure for four days.

END OF SECTION

SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form stripping.

1.02 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).

C. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).

D. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

E. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

A. See Structural Drawings for additional requirements.

B. In the event of conflicting requirements between structural notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on void form materials and installation requirements and form release agent.

C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.

B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.

C. Protect plastic foam products from damage and exposure to sunlight.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Chamfer outside corners of beams, joists, columns, and walls.

D. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

E. Comply with relevant portions of ACI CODE-318, ACI PRC-347, and ACI SPEC-301.

F. Design for adequate strength to sustain all construction loads without deformation or deflection.

2.02 FORM MATERIALS

A. Lumber, plywood, metal, or other approved material to provide continuous, straight, structurally sound formwork and to produce specified concrete finish.

2.03 FORMWORK ACCESSORIES

A. Form Ties: Snap-off type, galvanized metal, adjustable length, cone type, 1 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.
   1. Designed to prevent form deflection and to prevent spalling of concrete surfaces upon removal.
   2. Upon removal, no metal to be left within 1-1/2 inches of surface of concrete.

B. Form Tie Plugs: Concrete plugs for form tie locations where concrete is to remain exposed to view. Install prior to sandblasting, as applicable.
   1. Manufacturers:
      a. Dayton Superior Corporation; A2 Plastic Cones, A3 Standard Snap Tie and A54 Snaplug Concrete Plugs: www.daytonsuperior.com.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
   1. Do not use materials containing diesel oil or petroleum-based compounds.
   2. Products:
      a. Masco; Mascokote VOC: www.masco.net.
      b. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com/#sle.
      c. W. R. Meadows, Inc; Duogard II (water-based): www.wrmeadows.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

D. Filler Strips for Chamfered Corners: Rigid plastic or wood strip type; 3/4 x 3/4 inch size; maximum possible lengths.

E. Flashing Reglets: Galvanized steel, at least 22 gauge, 0.0299 inch thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.

F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete. See Structural Drawings for additional requirements.

G. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 12 00. See Structural Drawings for additional requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI SPEC-301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

E. Obtain approval before framing openings in structural members that are not indicated on drawings.

F. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

G. Coordinate this section with other sections of work that require attachment of components to formwork.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement.

3.06 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

3.07 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI SPEC-117, unless otherwise indicated.

3.08 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.09 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

3.10 RE-USE OF FORMS

A. Clean and repair surfaces of forms to be re-used in the Work. Split, frayed, delaminated or otherwise damaged form facing materials are not acceptable for re-use.

B. Form coating to be re-applied for formwork being reused.

END OF SECTION

SECTION 03 20 00
CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.02 REFERENCE STANDARDS

A. ACI MNL-66 - ACI Detailing Manual; 2020.

B. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

D. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2022a.

E. AWS D1.4/D1.4M - Structural Welding Code - Steel Reinforcing Bars; 2018, with Amendment (2020).

F. CRSI (DA4) - Manual of Standard Practice; 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

A. See Structural Drawings for additional requirements.

B. In the event of conflicting requirements between structural notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI MNL-66 Include bar schedules and drawings indicating sizes, lengths, material types, quantities, locations, shapes of bent bars, spacing and arrangement of bars, stirrup spacing, and location of splices.
   1. Shop drawings are not to be reproductions of the Construction Documents.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
   1. Deformed billet-steel bars.
   2. Unfinished.

B. Reinforcing Steel: ASTM A706/A706M, deformed low-alloy steel bars.
   1. Unfinished.

C. Welded Reinforcing Steel: ASTM A706/A706M, deformed low-alloy steel bars.
   1. Unfinished.

D. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is permitted only with the specific approval of Architect. Perform welding in accordance with AWS D1.4/D1.4M.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Chairs are not to be used for positioning of reinforcing in slabs-on-grade. Use pieces of masonry to position reinforcing.

C. Do not displace or damage vapor barrier. Patch and repair any damage that occurs to vapor barrier prior to placement of concrete.

D. Accommodate placement of formed openings.

E. Maintain concrete cover around reinforcing as follows:
   1. Unless noted otherwise in the Structural Drawings, provide 2 inches minimum concrete cover.
   2. Below grade, provide 3 inches minimum concrete cover.

F. Bond and ground all reinforcement to requirements of Section 26 05 26.

3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Section 01 40 00 - Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete building frame members.

B. Floors and slabs on grade.

C. Concrete foundation walls and footings.

D. Joint devices associated with concrete work.

E. Concrete curing.

1.02 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

C. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.

D. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

E. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.

F. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.

G. ACI PRC-308 - Guide to External Curing of Concrete; 2016.

H. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

I. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

J. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

K. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

L. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.

M. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.

N. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

O. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

P. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2020.

Q. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2023.

R. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).

S. ASTM C393/C393M - Standard Test Method for Core Shear Properties of Sandwich Constructions by Beam Flexure; 2020.

T. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).

U. ASTM C595/C595M - Standard Specification for Blended Hydraulic Cements; 2021.

V. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.

W. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.

X. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.

Y. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2023.

Z. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2020.

AA. ASTM C989/C989M - Standard Specification for Slag Cement for Use in Concrete and Mortars; 2024.

BB. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

CC. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

DD. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types); 2023.

EE. ASTM D8139 - Standard Specification for Semi-Rigid, Closed-Cell Polypropylene Foam, Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction; 2023.

FF. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

GG. ASTM E1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers; 2020.

HH. ASTM E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers (Metric); 2014.

II. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2018a.

JJ. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

KK. ASTM F1249 - Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor; 2020.

LL. COE CRD-C 572 - Handbook for Concrete and Cement Corps of Engineers Specifications for Polyvinylchloride Waterstop; 1974.

1.03 ADMINISTRATIVE REQUIREMENTS

A. See Structural Drawings for additional requirements.

B. In the event of conflicting requirements between structural notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.

C. Mix Design: Submit proposed concrete mix design for each type of concrete specified, supplying evidence that the design mix will produce concrete of quality and strength specified. Include proposed aggregate gradation for all concrete mixes intended for concrete slabs.
   1. Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.

2. Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.
3. Indicate proposed mix design complies with fiber reinforcing manufacturer's written recommendations.

D. Verification Samples: Submit sample chips of specified colors indicating pigment numbers and required dosage rates, for subsequent comparison to installed concrete.

E. Test Reports: Submit report for each test or series of tests specified.

F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.

B. Pre-Installation Conference: Prior to placement of concrete slabs, Schedule and administer a conference on site to review finishing techniques, use of additives and curing compounds, curing procedure and drying procedure. Attendees to include Contractor's superintendent, concrete supplier, concrete placement and finishing contractor, Architect, inspection and testing firm representative, and Owner's representative.

C. Follow recommendations of ACI PRC-305 when concreting during hot weather.

D. Follow recommendations of ACI PRC-306 when concreting during cold weather.

E. For concrete slabs, maintain maximum water-to-cement ratio as indicated in specified mix design.

F. It is the responsibility of the Contractor to ensure that all concrete slabs will achieve a moisture content acceptable to the manufacturer of the flooring material at the time scheduled for installation so there is no delay in completion date.

G. Any delay in substantial completion of the project due to unacceptable concrete moisture levels will not be considered as justification for extension of time.

1.06 FIELD CONDITIONS

A. For any slabs scheduled to receive integral color, polished concrete system or concrete chemical stain, building shell and structure must be complete prior to placement of slab.

PART 2 PRODUCTS

2.01 FORMWORK

A. Comply with requirements of Section 03 10 00.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 20 00.

2.03 CONCRETE MATERIALS

A. Cement: For interior concrete slabs, ASTM C150/C150M, Type II - Moderate Portland type or ASTM C595/C595M, Type IL - Portland type. For all other cast-in-place concrete, ASTM C150/C150M, Type I - Normal or Type II - Moderate Portland type.
1. Use the same cement brand, type and source for all interior concrete slabs for entire project.
2. Use the same cement brand, type and source for all remaining cast-in-place concrete for project.

B. Fine and Coarse Aggregates: ASTM C33/C33M.
1. Acquire all aggregates for any concrete to remain exposed to view from same source.
2. Ensure that all aggregates for any concrete to remain exposed to view have not been saturated with salt water.

3. Coarse aggregates to be clean, uniformly hard, durable particles of gravel or crushed stone.
    a. Slabs-on-Grade: 1-1/2 inch, maximum size.
    b. Elevated Slabs: 1 inch, maximum size.
4. Fine aggregates to be clean, hard, durable particles of natural sand, free of materials with deleterious reactivity to alkali in cement.

C. Fly Ash: ASTM C618, Class C or F.

D. Slag: ASTM C989/C989M, Grade 120.

E. Silica Fume: ASTM C1240, proportioned in accordance with ACI PRC-211.1.

F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

G. Early Age Crack-Control Fiber Reinforcement: ASTM C1116/C1116M.
1. Fiber Type: Alkali-resistant synthetic.
2. Fiber Length: 1/2 to 3/4 inch, nominal, single-cut or graded.
3. Products:
    a. Fibermesh; Fibermesh 150e3: www.fibermesh.com/#sle.
    b. GCP Applied Technologies; SINTA M2219: www.gcpat.com/#sle.
    c. Solomon Colors; Solomon Colors UltraFiber 500: www.solomoncolors.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260/C260M.
1. Application: Do not use at concrete scheduled to be left exposed, sealed or dry-polished.

C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.

D. Mid-to-High Range Water Reducing Admixture: ASTM C494/C494M Type A or F.
1. Products:
    a. Master Builders Solutions; MasterPolyheed 997: www.master-builders-solutions.com.
    b. W.R. Grace & Co.; Daracem 19 or 55: www.grace.com.
    c. Substitutions: See Section 01 60 00 - Product Requirements.

E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.

F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.

G. Accelerating Admixture: ASTM C494/C494M Type C.

H. Retarding Admixture: ASTM C494/C494M Type B.

I. Shrinkage Reducing Admixture: For use in non-air entrained concrete formulated to reduce drying shrinkage and drying shrinkage-induced cracking and curling by reducing capillary or surface tension of pore water.
1. Application: For interior slab construction.
    a. Products:
        1) GCP Applied Technologies; Eclipse Floor 200: www.gcpat.com/#sle.
        2) Master Builders Solutions; MasterLife SRA 20: www.master-builders-solutions.com.
        3) Substitutions: See Section 01 60 00 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Underslab Vapor Retarder:
1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is

prohibited.
2. Water Vapor Permeance: 0.010 perms, maximum, when tested in accordance with ASTM F1249.
3. Products:
   a. Insulation Solutions, Inc; Viper VaporCheck II - 15-mils (Class A): www.insulationsolutions.com.
   b. Stego Industries, LLC; Stego Wrap Vapor Barrier - 15-mil: www.stegoindustries.com/#sle.
   c. Raven Industries; VaporBlock VB15 - 15-mils (Class A): www.ravenefd.com.
   d. W. R. Meadows, Inc; PERMINATOR Class A - 15 mils (0.38 mm): www.wrmeadows.com/#sle.
   e. Substitutions: See Section 01 60 00 - Product Requirements.

B. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
1. Grout: Comply with ASTM C1107/C1107M.
2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

2.06 BONDING AND JOINTING PRODUCTS

A. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch deep sealant pocket after removal.
1. One of the following:
   a. Material: ASTM D1751, cellulose fiber.
   b. Material: ASTM D8139, semi-rigid, closed-cell polypropylene foam.
2. Products:
   a. Nomaco, Inc; Nomaflex Expansion Joint Filler with Void Cap Option: www.nomaco.com/#sle.
   b. W. R. Meadows, Inc; Fibre Expansion Joint with Snap Cap: www.wrmeadows.com/#sle.
   c. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 CURING MATERIALS

A. Moisture-Retaining Sheet: ASTM C171.
1. Non-woven fabric laminated with a polyethylene film on one side.
2. Products:
   a. PNA; HydraCure S16: www.pna-inc.com.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIXING DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.

B. Concrete design mixes are the responsibility of the manufacturer to achieve strengths noted, except where specific requirements are indicated below in concrete mix descriptions.

C. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer, unless specific requirements are listed in concrete mix design.

D. Fiber Reinforcement: Add to mix at rate indicated in mix design.

E. Normal Weight Concrete for Footings, Foundations:
1. Compressive Strength, when tested in accordance with ASTM C393/C393M at 28 days: 3,000 pounds per square inch.
2. Supplementary Cementitious Materials: Mix to contain either fly ash or slag:

a. Fly Ash Content: Minimum 10 percent, maximum 20 percent of cementitious materials by weight.
b. Slag Content: Minimum 25 percent, maximum 35 percent of cementitious materials by weight.

3. Maximum Slump for Footings and Foundation Walls: 4 inches, plus or minus 1 inch.
4. Maximum Slump for Structural Slabs, Beams and Columns: 4 inches, plus or minus 1 inch.
5. Maximum Aggregate Size: 5/8 inch.

F. Normal Weight Concrete for Interior Slabs - **Type 'C' Slab**:
1. Application: Interior slabs that are left to be exposed as finish floor or are scheduled to receive cementitious coating, epoxy coating, acid stain, hardening/sealer agent, integral color, or polished concrete system.
2. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch.
3. Supplementary Cementitious Materials: Mix to contain either fly ash or slag:
a. Fly Ash and Slag Content: Minimum 10 percent, maximum 20 percent of cementitious materials by weight.
4. Aggregates: Refer to specific grading requirements listed under Concrete Materials.
5. Fiber Reinforcement: 1-1/2 lb per cubic yard.
6. Water-Cement Ratio: Maximum 38 percent by weight.
7. Admixtures:
a. Mid-to-High Water Reducing Admixture: In accordance with concrete supplier recommendations.
b. Shrinkage Reducing Admixture: 1-1/2 gallon per cubic yard.
8. Total Air Content: 3 percent, determined in accordance with ASTM C173/C173M.
9. Maximum Slump: 5 inches, plus or minus 1 inch.

2.09 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
1. Fiber Reinforcement: Batch and mix as recommended by manufacturer for specific project conditions.

B. Transit Mixers: Comply with ASTM C94/C94M.

C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Verify that forms are clean and free of rust before applying release agent.

B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

C. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.

D. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

E. Interior Slabs on Grade Sub-base: Compacted under-slab granular base, compacted to 95 percent of maximum dry weight in accordance with ASTM D1557:

F. Verify that surface over which vapor retarder is to be installed is complete and ready before proceeding with installation of vapor retarder.

G. Vapor Retarder at Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Lap sheet over footings and seal to foundation walls. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
   1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.
   2. Installation of screeds, construction joint forms, etc., are not to penetrate vapor retarder.
   3. Inspect all surfaces of barrier and apply a patch over any torn or damaged surface. Lap patches over damaged areas 6 inches minimum.
   4. Inspection of Vapor Retarder: Refer to Field Quality Control requirements.
   5. Remove any water from the surface of the vapor retarder with portable, high speed air blowers, just prior to placing concrete.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI PRC-304.

B. Notify Architect, Owner's Representative, Building Department, and Inspection and Testing Firm not less than 24 hours prior to commencement of placement operations. Refer to Field Quality Control Requirements.
   1. Do not place concrete until forms are properly braced, cleaned of foreign matter, all reinforcing and embedded items are in place and inspected and approved by the Architect, Building Department, and Inspection and Testing Firm.

C. Do not add water to the concrete mix at the job site without approval of the Architect / Engineer.

D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

E. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

F. Deposit concrete continuously and at such a rate that the concrete being placed is intermixed thoroughly with previously deposited concrete without formation of seams, planes of weakness or rock pockets.

G. Internally vibrate all concrete around reinforcing steel, embedded items, into all corners of forms, eliminating air and rock pockets. Concrete is not to move horizontally with the vibrator.

H. Experienced workmen to handle vibrators. A spare vibrator, in good working condition, is to be kept on the job site at all times during concrete placement operations.

I. Do not place (drop) concrete from a height greater than 6 feet.

J. For interior concrete slabs, after rodding or laser screed, skip float with a bull float.

3.04 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Construction Joints: Install load transfer devices as indicated. Provide where indicated on the Drawings, and at all edges of concrete slabs between pours.

D. Control Joints: Saw cut joints at surface before concrete begins to cool, within 1 to 4 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab. Provide where indicated on drawings, or if not indicated, provide at spacing as follows. Avoid reentrant (interior) corners and slabs where the width to length ratio exceeds 2:1.
   1. 16 feet on center between joints, maximum.

E. Bulkhead Joints: Joints to provide bond break between pours.

3.05 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch in 10 feet.
   2. Under Seamless Fluid-Applied Flooring: 1/4 inch in 10 feet.

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.06 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
   1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
   2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
   3. Form Tie Plugs: Provide Form Tie Concrete Plugs at all snap-tie locations where concrete is to remain exposed to view. Install prior to skim coating or sand blasting.

D. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
   1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI PRC-302.1; thin floor coverings include fluid-applied flooring.
   2. Decorative Exposed Surfaces: Trowel as described in ACI PRC-302.1; take measures necessary to avoid black-burnish marks; decorative exposed surfaces include all other exposed slab surfaces.

E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

3.07 CURING AND PROTECTION

A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than seven days.
   2. High early strength concrete: Not less than four days.

C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

D. Surfaces Not in Contact with Forms:
   1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring

and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.

2. Slabs to Remain Exposed with no Adhesive-Applied Flooring: Ensure that selected cure method will not cause color variations in the finished surface. Plastic sheeting or visqueen is not to be used for cover.
3. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or moisture-retaining sheet.
    a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 4 days.
    b. Spraying: Spray water over floor slab areas and maintain wet.
    c. Moisture-Retaining Sheet: Place fabric-side down over floor slab areas, lapping ends and sides, per manufacturer's instructionss; maintain in place.
4. Final Curing: Begin after initial curing but before surface is dry. For a minimum of 90 days prior to installation of finish flooring:
    a. Maintain a minimum air temperature of 65 degrees F at night and 60 degrees F during the day.
    b. Maintain a maximum relative humidity of 45 percent.
    c. Maintain ventilation of one and one half air changes per hour, minimum.

3.08 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. The vapor barrier is to be inspected by the Architect prior to placing slab-on-grade concrete. Provide a minimum of 24 hours notice. Concrete slab is not to be placed without approval of vapor barrier installation by the Architect.

E. With each load of concrete delivered to the site, furnish delivery batch ticket to the Contractor. Delivery tickets to be kept on file, on site by the Contractor's superintendent, and made available to the Architect, upon request. Batch ticket to show batch weights of:
    1. Cementitious materials.
    2. Water.
    3. Aggregates.
    4. Additives.

F. For placing of concrete slabs, the Architect, the Owner's representative or a representative of the inspection and testing firm to be present to ensure that water added to the mix does not exceed one gallon per cubic yard. Addition of water at the job site must be approved by Architect and by the batch plant quality supervisor.

G. For any water that is added to concrete mixes at the job site, note quantity on batch ticket.

H. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

I. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

J. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.09 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.10 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 03 30 01
SITE CAST IN PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

This Special Provision includes Contractor provided Cast-in-Place Concrete for miscellaneous concrete including, but not limited to footings, bollards, other miscellaneous project concrete.

1.02 SUBMITTALS

A. Concrete mix designs and submittals required by ACI 301.

1.03 QUALITY ASSURANCE

A. Ready-Mixed Concrete Producer Qualifications: ASTM C 94/C 94M.

B. Comply with ACI 301, "Specification for Structural Concrete"; ACI 117, "Specifications for Tolerances for Concrete Construction and Materials"; and CRSI's "Manual of Standard Practice."

1.04 CONCRETE WASH BASIN

A. Contractor shall establish an enclosed concrete wash basin where all concrete trucks shall clean out their equipment. Contractor shall prepare a shop Drawing indicate the type, size and location of Concrete Wash Basin. Concrete Wash Basin shall be lined with a minimum 20 mil polyethylene liner. Contractor shall remove all evidence of Concrete Wash Basin at project completion and dispose off-site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars: See Section 033100.

B. Plain-Steel Welded Wire Reinforcement: See Section 033100.

C. Portland Cement: ASTM C 150, Type I or II.

D. Fly Ash: ASTM C 618, Type C or F.

E. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

F. Aggregates: ASTM C 33, uniformly graded.

G. Air-Entraining Admixture: ASTM C 260.

H. Chemical Admixtures: ASTM C 494, water reducing and accelerating and water reducing and retarding. Do not use calcium chloride or admixtures containing calcium chloride.

I. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

J. NGP 428E Saddle Threshold – 8" wide x ½" High or Approved Equal.

2.02 MIXES

A. Comply with ACI 301 requirements for concrete mixtures.

B. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301, as follows:
1. Minimum Compressive Strength: 4000 psi (20.7 MPa) at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).
4. Air Content: Maintain within range permitted by ACI 301. Exterior concrete 6%. Do not allow air content of floor slabs to receive troweled finishes to exceed 3 percent.
5. Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

C. Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M.
1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 CONCRETING

A. Construct formwork according to ACI 301 and maintain tolerances and surface irregularities within ACI 347R limits of Class A, 1/8 inch (3.2 mm) for concrete exposed to view and Class C, 1/2 inch (13 mm) for other concrete surfaces.

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

C. Install construction, isolation, and contraction joints where indicated. Install full-depth joint-filler strips at isolation joints.

D. Place concrete in a continuous operation and consolidate using mechanical vibrating equipment.

E. Protect concrete from physical damage, premature drying, and reduced strength due to hot or cold weather during mixing, placing, and curing.

F. Formed Surface Finish: Smooth-formed finish for concrete exposed to view, coated, or covered by waterproofing or other direct-applied material; rough-formed finish elsewhere.

G. Slab Finishes: Comply with ACI 302.1R for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Provide the following finishes:
1. Smooth trowel finish with no beeholes or surface irregularities for all top of footings.
2. For all exposed concrete slabs/walks/pads, see Special Provision 033120.

H. Owner will engage a testing agency to perform field tests and to submit test reports.

I. Protect concrete from damage. Repair surface defects in formed concrete and slabs.

3.02 CLEANUP

A. Contractor shall clean up and remove all concrete spatters and spray evidence on other site improvements immediately. All evidence of excess concrete disposed on site shall be removed from project site within 48 hours of pour.

B. Clean up entire area of all excess materials, debris, etc., and leave project in a neat, orderly condition.

END OF SECTION

SECTION 03 31 00
SITE CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form stripping.

1.02 REFERENCES

A. ACI 301 – Structural Concrete for Buildings

B. ACI 318 – Building Code Requirements for Reinforced Concrete.

C. ACI 347 – Recommended Practice for Concrete Formwork.

1.03 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing to conform to code requirements; resultant concrete to conform to required shape, line and dimension.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with WSDOTSS.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for design, fabrication, erection and removal of formwork.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Material and Equipment: Transport, handle, store, and protect products.

B. Deliver void forms and installation instructions in manufacturer’s packaging.

C. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 - PRODUCTS

2.01 WOOD FORM MATERIALS

A. Softwood Plywood: PS 1, C Grade, Group 2.

2.02 PREFABRICATED FORMS

A. Void Forms: Moisture resistant treated paper faces, biodegradable, structural sufficient to support weight of wet concrete mix until initial set.

2.03 METAL FORMS

A. Metal forms used for pouring curbs shall be straight, and clear of dents, deformations, or other imperfections, and shall be clean and free of concrete debris.

2.04 FORMWORK ACCESSORIES

A. Form Ties: Snap-off type, adjustable length, cone type, free of defects that could leave holes larger than 1 inch in concrete surface.

B. Form Release Agent: Colorless mineral oil which will not stain concrete or absorb moisture.

C. Reveal, Void, and Chamfer Forms:
1. Hardened plastic strips equal to Sylvan Products, LLC Plasti-Flex Polyethylene Reveal Strips
2. Wood reveal strips, void strips, and chamfer strips shall not be used.

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

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings

B. Verify all formwork for every pour with Owner. Provide Owner with 48 hours' notice formwork is ready to be reviewed.

3.02 EARTH FORMS

A. Earth forms are not permitted.

3.03 ERECTION – FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

E. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

F. Coordinate this section with other sections of work which require attachment of components to formwork.

G. If formwork is placed after reinforcement resulting in insufficient concrete cover over or in proximity to, reinforcement before proceeding, request instructions from Owner.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, void-chamfer-reveal forms, anchoring devices, and embedded items, if manufacturer's published instructions specify a form-release agent is to be applied.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.

3.08 FIELD QUALITY CONTROL

A. Quality Control: Field inspection and testing.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure, prior to concrete placement.

C. Do not reuse wood formwork more than 2 times. Do not patch formwork.

3.09 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION

SECTION 03 31 10
SITE CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

This Special Provision includes providing reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

1.02 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 318 - Building Code Requirements for Reinforced Concrete.

C. ACI SP-66 - American Concrete Institute - Detailing Manual.

D. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

E. AWS D1.4 - Structural Welding Code for Reinforcing Steel.

F. AWS D12.1 - Welding Reinforcement Steel, Metal Inserts and Connections in Reinforced Concrete Construction.

G. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.

H. CRSI 63 - Recommended Practice for Placing Reinforcing Bars.

I. CRSI 65 - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature.

1.03 SUBMITTALS FOR REVIEW

A. Shop Drawings: Indicate bar sizes, spacing’s, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice.

B. Design reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Washington.

C. Welders' Certificates: Submit under provisions of WSDOTSS requirements, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

PART 2 - PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615, 40 ksi yield grade; deformed billet steel bars, unfinished.

B. Welded Steel Wire Fabric: ASTM A185 Plain Type; in flat sheets; unfinished.

2.02 ACCESSORIES

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice.

B. Weld reinforcement in accordance with AWS D1.4.

C. Locate reinforcing splices not indicated on drawings, at point of minimum stress.

PART 3 - EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Accommodate placement of formed openings.

C. Maintain code required concrete cover around reinforcing.

3.02 FIELD QUALITY CONTROL

A. Quality Control: Field inspection and testing.

3.03 SCHEDULES

A. Reinforcement for Foundation and Slab-on-Grade: Deformed bars and wire fabric, plain finish.

END OF SECTION

SECTION 03 31 40
SITE CONCRETE CURING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Initial and final curing of horizontal and vertical concrete surfaces.

1.02 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 302 - Recommended Practice for Concrete Floor and Slab Construction.

C. ACI 308 - Standard Practice for Curing Concrete.

D. ASTM C171 - Sheet Materials for Curing Concrete.

E. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

F. ASTM D2103 - Polyethylene Film and Sheeting.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products under provisions of WSDOTSS specifications.

B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Waterproof Paper Type C: ASTM C171, treated to prevent separation during handling and placing, standard color.

B. Water: Potable, not detrimental to concrete.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify substrate conditions.

B. Verify that substrate surfaces are ready to be cured.

3.02 EXECUTION - HORIZONTAL SURFACES

A. Cure floor surfaces in accordance with ACI 308.

B. Polyethylene Film: Spread over pavement slab areas, lap edges and sides, seal with pressure sensitive tape; maintain in place for 7 days.

3.03 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of WSDOTSS.

B. Do not permit traffic over unprotected at-grade slab surface.

END OF SECTION

SECTION 03 31 73
CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.01 REFERENCES

A. ASTM International (ASTM):
1. C 920 - “Specification for Elastomeric Joint Sealants.”

1.02 SUBMITTALS

A. Manufacturer's data on materials, and application equipment and procedures.

1.03 WARRANTY

A. Furnish 2 year special warranty on materials and labor for installed sealants.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Exterior Sealant: Tremco, Pecora Corporation, Sonneborn Building Products, ASTM C 920, single component, gun-grade, non-sag, acrylic terpolymer sealant, with movement capability of plus or minus 12-1/2 percent. Color: Grey.

B. Joint Backing: Closed cell neoprene or polyethylene, compatible with sealant materials, of sizes and shapes as recommended by the joint sealant manufacturer.

C. Primers, Solvents, and Cleaning Materials: Non-staining and non-injurious to exposed surfaces, of types as recommended by the joint sealant manufacturer.

PART 3 - EXECUTION

3.01 PREPARATION

A. Surface Preparation:
1. Thoroughly clean and dry surfaces prior to installation.
2. Clean metals with manufacturer’s recommended solvent, wipe clean.
3. Remove any dust, dirt, oil, grease, and any other foreign substances from surface areas to receive sealant.
4. Prime surfaces as recommended by sealant manufacturer. Prime all concrete, brick masonry, and concrete unit masonry substrates, regardless of manufacturer’s requirements.
5. Mask off any adjacent surfaces which are not to receive sealant.

3.02 APPLICATION

A. General: Comply with sealant manufacturer’s installation instructions. Provide bond breaker tape as required to prevent sealant adhesion to backing. Joint depth 1/2 joint

width, but not less than 1/4 inch nor more than 1/2 inch, unless otherwise specified by sealant manufacturer.

B. Joint Backing: Install as recommended by sealant manufacturer to prevent sealant from adhering to rigid, inflexible materials or joint surfaces where such adhesion would result in sealant failure. Sealant shall bond two opposing joint surfaces.

C. Sealant Application:
1. Do not install sealants during rainfall or very windy conditions when windborne contaminants can become embedded in uncured sealant.
2. Apply materials with hand gun, powered gun, or trowel to completely fill voids and joints, free of wrinkles and skips.
3. Observe temperature control in accordance with sealant manufacturer's written recommendations.
4. Do not allow any air entrapment in sealant.
5. Extrude sealant fully into joint to be sealed, tool sealant to press into joint, assuring full adhesion to sides of joint surfaces, resulting in a uniformly smooth concave profile.
6. Tool sealant using only materials recommended by sealant manufacturer.
7. Remove masking tape immediately after sealant application to produce clean, sharp line.
8. Allow sealants to cure adequately prior to covering with other Work.
9. Coordinate sealant installation with concrete, masonry, and flashing applications.
10. Apply sand to wet sealant surfaces to match finish of adjacent concrete and masonry conditions, if applicable.

3.03 CLEANING

A. Remove all empty containers, materials, and debris from the site. Dispose off site in accordance with applicable regulations.

B. Remove any sealant spills, masking materials, and similar items from all surfaces not intended for their application.

C. Clean and repair surfaces soiled or damaged by sealant Work.

END OF SECTION

SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete sealers.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference: Conduct conference at the Project Site to verify project requirements, finishing techniques, protection requirements, and warranty requirements. Attendees to include Owner, Architect, Contractor, and concrete floor finish applicator.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

C. Manufacturer's Instructions: Indicate manufacturer's installation instructions for preparation of substrate, application of finishing products, and requirements for protection of finished surface.

D. Samples for Initial Selection: Provide manufacturer's color charts for selection.

E. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of type specified and with at least 3 years of documented experience.

1.05 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Company specializing in manufacturing the products specified in this section with a minimum of five years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with at least three years of documented experience installing projects of similar scope and size.
   1. Company to be certified as an approved installer by manufacturer, with current certificate.

1.06 MOCK-UPS

A. Construct an in-place mock-up for concrete sealer application, 10 feet square, minimum. Mock-up to include both pre-coated existing concrete and new cementitious topping slab areas.

B. Locate where directed by Architect.
   1. Notify Architect and Owner Representative seven days in advance of date and time when mock-up will be constructed.
   2. Obtain approval of mock-up from Architect and Owner Representative prior to proceeding with work.
   3. If Architect and Owner determine that mock-up does not meet the requirements re-install mock-up in alternate approved location for approval, using same procedure outlined above.

C. Approved mock-ups are to be maintained in an undisturbed condition as a standard for judging the completed work.

D. Approved mock-up may remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's sealed packaging, including application instructions.

1.08 FIELD CONDITIONS

A. Maintain ambient temperature of 50 degrees F minimum or as specified in the manufacturer's written instructions.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Solid-Color Sealer:
   1. Use at exterior concrete walkways where indicated on grand stand plans.

2.02 COATINGS

A. Solid Color Concrete Sealer: Tintable solvent-based coating.
   1. Apply two coats.
   2. Colors: Gray and white; final colors as selected by Architect from manufacturer's standard colors.
   3. Product: Sherwin Williams; H&C Colortop Solvent-based Solid Color Concrete Sealer: www.hcconcrete.com.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that floor surfaces are acceptable to receive the work of this section.

B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

3.02 GENERAL

A. Apply materials in accordance with manufacturer's instructions.

3.03 COATING PREPARATION AND APPLICATION

A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.

B. Clean area in accordance with manufacturer's instructions using recommended products.

C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.

D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, sealing and workmanship.

3.04 PROTECTION

A. Protect installed coatings from subsequent construction operations.

END OF SECTION

SECTION 03 54 00
CAST UNDERLAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Liquid-applied self-leveling floor underlayment.
   1. Use cementitious type at Team Room 003 and Stadium deck.

1.02 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.

B. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

C. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2021.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

E. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.

C. Manufacturer's Instructions.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.06 FIELD CONDITIONS

A. Do not install underlayment until floor penetrations and peripheral work are complete.

B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.

C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cementitious Underlayment:
   1. ARDEX Engineered Cements; K 301 Exterior Self-Leveling Concrete Topping: www.ardexamericas.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. Cast Underlayments, General:
   1. Comply with applicable code for combustibility or flame spread requirements.

2. Provide certificate of compliance from authority having jurisdiction indicating approval of underlayment materials in the required fire rated assembly.

B. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
   1. Compressive Strength: Minimum 4300 pounds per square inch after 28 days, tested per ASTM C109/C109M.
   2. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
   3. Thickness: Capable of thicknesses from 1/4 inch to maximum 2 inch with aggregate.
   4. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.

C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.

D. Primer: Manufacturer's recommended type.

E. Joint and Crack Filler: Latex-based filler, as recommended by manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

3.02 PREPARATION

A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.

B. Concrete: Prepare surfaces according to ICRI 310.2R.

C. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.

D. Vacuum clean surfaces.

E. Prime substrate in accordance with manufacturer's instructions. Allow to dry.

F. Close floor openings.

3.03 APPLICATION

A. Install underlayment in accordance with manufacturer's instructions.

B. Pump or pour material onto substrate. Do not retemper or add water.
   1. Pump, move, and screed while the material is still highly flowable.
   2. Be careful not to create cold joints.

C. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.

3.04 CURING

A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.

B. Air cure in accordance with manufacturer's instructions.

3.05 PROTECTION

A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.

B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

SECTION 04 05 11
MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar for masonry.

B. Grout for masonry.

1.02 REFERENCE STANDARDS

A. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.

B. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.

C. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

D. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.

E. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.

F. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

G. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

H. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2023.

I. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.

J. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry; 2020.

K. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

L. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2023b.

M. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2019a.

N. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2020.

O. ASTM E518/E518M - Standard Test Methods for Flexural Bond Strength of Masonry; 2022.

P. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.03 ADMINISTRATIVE REQUIREMENTS

A. See Structural Drawings for additional requirements.

B. In the event of conflicting requirements between structural notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.

C. Samples: Submit two samples of mortar, illustrating mortar color and color range.

D. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

A. Use only factory premixed packaged dry materials for mortar and grout, with addition of water only at project site.
   1. Exception: If a specified mix design is not available in a premixed dry package, provide equivalent mix design using standard non-premixed materials.

B. Use only ready-mixed grout produced in off-site plant.

C. Mortar Color: Natural gray unless otherwise indicated in Schedule at the end of this section.

D. Mortar Mix Designs: ASTM C270, Property Specification.
   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior Cavity Walls: Type S mortar with Type N pointing mortar.

E. Grout Mix Designs:
   1. Engineered Masonry: 2,500 psi strength at 28 days; 6 to 8 inches slump; mix in accordance with ASTM C476.
      a. See Structural Drawings for additional requirements.
      b. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
      c. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.02 MATERIALS

A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Types as scheduled in this section.
   2. Color: Standard gray unless otherwise scheduled.
   3. Manufacturers:
      a. Mutual Materials; DESIGNMIX Professional-Grade Mortar Mix: www.mutualmaterials.com.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.

C. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.

D. Water: Clean and potable.

E. Integral Water Repellent Admixture: Polymeric liquid admixture added to mortar at the time of manufacture.
   1. Performance of Mortar with Integral Water Repellent:

a. Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours:
   1) No water visible on back of wall above flashing at the end of 24 hours.
   2) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
   3) No more than 25 percent of wall area above flashing visibly damp at end of test.
b. Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
c. Compressive Strength: ASTM C1314; maximum 5 percent decrease.

2. Use only in combination with masonry units produced with integral water repellent admixture.

2.03 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.

D. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

E. Do not use anti-freeze compounds to lower the freezing point of mortar.

F. If water is lost by evaporation, re-temper only within two hours of mixing.

2.04 GROUT MIXING

A. Mix grout in accordance with ASTM C94/C94M.

B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.

C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install mortar and grout to requirements of section(s) in which masonry is specified.

B. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

3.02 GROUTING

A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of Contract Documents.

B. Low-Lift Grouting:
   1. Limit height of pours to 12 inches.
   2. Limit height of masonry to 16 inches above each pour.
   3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

C. High-Lift Grouting:
   1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
   2. Hollow Masonry: Limit lifts to maximum 4 feet and pours to maximum height of 24 feet.
   3. Place grout for spanning elements in single, continuous pour.
   4. Mechanically vibrate all lifts over 12 inches.

3.03 FIELD QUALITY CONTROL

A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 40 00 - Quality Requirements.

B. Test and evaluate mortar in accordance with ASTM C780 procedures.
   1. Test frequency: Refer to Structural Drawings.

C. Test and evaluate grout in accordance with ASTM C1019 procedures.
   1. Test frequency: Refer to Structural Drawings.

D. Prism Tests: Test masonry and mortar panels for compressive strength in accordance with ASTM C1314, and for flexural bond strength in accordance with ASTM C1072 or ASTM E518/E518M; perform tests and evaluate results as specified in individual masonry sections.

3.04 SCHEDULES

A. Exterior CMU Wall: Type S mortar with Type N pointing mortar.

END OF SECTION

SECTION 04 20 00
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Mortar and grout.

C. Reinforcement and anchorage.

D. Flashings.

E. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

B. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2023.

C. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2023.

D. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

E. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2023b.

F. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2020.

G. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.

H. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.

I. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.03 ADMINISTRATIVE REQUIREMENTS

A. See Structural Drawings for additional requirements.

B. In the event of conflicting requirements between structural notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Shop Drawings: Submit shop drawings for fabrication, bending and placement of masonry reinforcement. Show bar sizes, material types, lengths, spacings and locations, and quantities of reinforcing steel; bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of masonry reinforcement, including types and location of splices. Include special reinforcement required at openings. Shop drawings are not to be reproductions of the construction documents.

1. Include calculations or selections from the manufacturer's prescriptive design tables that indicate compliance with the applicable building code and project conditions.
2. Include the design engineer's stamp or seal on each sheet of shop drawings.

D. Samples: Submit five samples of decorative block units to illustrate color, texture, and extremes of color range OR one full-size block of each color and texture specified.

E. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the

manufacture of concrete block.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Fire Rated Assemblies: Comply with requirements of indicated tested assemblies.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Manufacturers:
   1. Mutual Materials: www.mutualmaterials.com.
   2. Basalite Concrete Products: www.basalite.com.
   3. Willamette Graystone: www.williamettegraystone.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 8 inches.
   2. Load-Bearing Units: ASTM C90, normal weight.
      a. Hollow block.
      b. Exposed Faces:
         1) Color Finish: Willamette Graystone, Tan; ground face.
   3. Nonloadbearing Units: ASTM C129.
      a. Hollow block.
      b. Exposed Faces:
         1) Color and Finish: Willamette Graystone, Tan; ground face.
   4. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at time of manufacture.
      a. Performance of Units with Integral Water Repellent:
         1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
            (a) No water visible on back of wall above flashing at the end of 24 hours.
            (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
            (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
         2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
         3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
      b. Use only in combination with mortar that also has integral water repellent admixture.
      c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.02 MORTAR AND GROUT MATERIALS

A. Mortar and Grout: As specified in Section 04 05 11.

2.03 REINFORCEMENT AND ANCHORAGE

A. Refer to Structural Drawings for sizes, quantity and additional requirements for reinforcing and anchorage.

B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; galvanized.

C. Welded Reinforcing Steel: ASTM A706/A706M, Grade 60 deformed low-alloy steel bars; unfinished.

2.04 FLASHINGS

A. Metal Flashing Materials: As specified in Section 07 62 00.

2.05 ACCESSORIES

A. Joint Sealants: Sanded joints with backer rod; see 07 92 00 - Joint Sealants.

B. Weeps:
   1. Type: Polyester mesh.
   2. Color(s): As selected by Architect from manufacturer's full range.
   3. Manufacturers:
      a. Hohmann & Barnard, Inc; Quadro-Vent: www.h-b.com/#sle.
      b. Mortar Net Solutions; WeepVent: www.mortarnet.com/#sle.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Cleaning Solution: Specially formulated for effectively cleaning masonry work without damaging or marring the surface of masonry or adjacent materials. Muriatic acid is not acceptable for use as a cleaner.
   1. Manufacturers - Cleaners for Concrete Masonry (Natural Grey):
      a. Diedrich Technologies (a Hohmann & Barnard, Inc. Company); Diedrich 202 New Masonry Detergent: www.diedrichtechnologies.com.
      b. EaCo Chem, Inc; NMD 80 New Masonry Detergent: www.eacochem.com.
      c. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Manufacturers - Cleaners for Concrete Masonry (Integrally Colored):
      a. Fabrikem Manufacturing Ltd; New Masonry Cleaner Type L or V: www.fabrikem.com.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

B. In rainy weather, do work only under cover.

C. During hot weather, precautions to be taken to avoid over-rapid drying out of masonry, by wetting and covering as required.

3.04 DAILY PROCEDURES

A. Prior to installing new work adjacent to work previously set, sweep clean and thoroughly wet the work in place.

B. Prior to stopping work each day, bring face and backing to same level, as applicable.

C. Sweep off fins and excess mortar as work progresses.

D. Cover top of all exposed masonry walls with a waterproof, non-staining cover at the end of each work day.

3.05 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints at Exterior: Concave, struck with concave tool. Do not use raked, flush, struck, beaded, weathered or other joint profiles, except where specifically noted otherwise.
   4. Mortar Joints at Interior: Flush, struck with concave tool. No ridges at intersections between horizontal and vertical joints will be allowed. Do not use raked, struck, beaded, weathered or other joint profiles, except where specifically noted otherwise.

3.06 PLACING AND BONDING

A. Lay hollow masonry units with face shell bedding on head and bed joints.

B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

C. Remove excess mortar and mortar smears as work progresses.

D. Interlock intersections and external corners except where control joints or expansion joints are scheduled.

E. Width of masonry units where adjacent to opening or hinge side of door frame opening is to be 4 inches, minimum.

F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

G. Perform job site cutting of masonry units with power saw to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges. Masonry Contractor to perform cutting of units for other trades and contractors.

H. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

I. Defective, chipped, discolored or broken masonry units are not to be used.

J. Tool mortar joints when they are thumbprint hard.

3.07 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

B. Install weeps directly on top to through-wall flashing, with no mortar bed between.

3.08 LINTELS

A. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled. Refer to Structural Drawings for size and quantity of bars, and installation requirements.

3.09 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

3.10 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Locate control joints where shown on Drawings. If control joints are not shown on Drawings, provide control joints at a minimum of every 25 lineal feet of wall or 1.5 times the height of the wall, whichever is less. Provide control joints at all inside corners and changes of wall height, unless shown otherwise on the Drawings.

C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.

D. Form expansion joint as detailed on drawings.

3.11 BUILT-IN WORK

A. As work progresses, install built-in metal door frames, fabricated metal frames, window frames, wood nailing strips, and anchor bolts, mechanical, electrical work and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Use anchors provided by frame manufacturer.
   2. Utilize temporary bracing at built-in frames to prevent any movement or displacement during grouting.
   3. Install masonry units tight to jambs of built-in frames.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.12 TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

3.13 CUTTING AND FITTING

A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.14 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

3.15 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Concrete Masonry Units: Clean all CMU units with cleaning solution in accordance with manufacturer's instructions, protecting adjacent work. Masonry scheduled to be painted is to be kept clean with mason tools and dry brushing in lieu of pressure washing, in an effort to not introduce moisture into the wall.

3.16 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members.

B. Base plates, shear stud connectors and expansion joint plates.

C. Grouting under base plates.

1.02 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual; 2023.

B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2022.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

I. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

J. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2019.

K. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric); 2021a.

L. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2022.

M. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions; 2019.

N. ASTM F959/F959M - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners, Inch and Metric Series; 2017a.

O. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2020.

P. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2023.

Q. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

R. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

S. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

T. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2020.

U. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

1.03 ADMINISTRATIVE REQUIREMENTS

A. The Drawings are dimensioned for general layout and are not necessarily dimensioned per AISC Standards and the AISC code for standard practice. It is the responsibility of the Contractor to provide Shop Drawings with detail dimensions as required to fabricate and erect steel components.

B. See Structural Drawings for additional requirements.

C. In the event of conflicting requirements between Structural Notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Complete details and schedules for fabrication and shop assembly of members.
   1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
   2. Connections not detailed.
   3. Indicate cambers and loads.
   4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
   5. The dimensions shown in the Drawings are for general layout only and are not necessarily in accordance with AISC Standards and the AISC code for standard practice. It is the responsibility of the Contractor to coordinate between the Architectural and Structural drawings to product the Shop Drawings.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

1.05 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."

B. Structural steel members designated as architecturally-exposed structural steel (AESS) to also comply with Section 05 12 13.

C. Fabricator: Company specializing in performing the work of this section with minimum five years of documented experience.

D. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.

E. Fabricator Qualifications:
   1. A qualified steel fabricator that participates in the AISC Quality Certification Program and is designated as an AISC-Certified Plant, Category STD.

F. Erector: Company specializing in performing the work of this section with minimum five years of documented experience.

G. Erector Qualifications: A qualified erector that participates in the AISC Supplemental Program Requirements for Structural Steel Erectors.

H. Design connections not detailed on drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Angles, Plates, Channels, S Shapes, and M Shapes: ASTM A36/A36M.

B. Steel W Shapes and Tees: ASTM A992/A992M.

C. Steel Shapes, Plates, and Bars: ASTM A529/A529M high-strength, carbon-manganese structural steel, Grade 50.

D. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.

E. Hot-Formed Structural Tubing: ASTM A501/A501M, seamless or welded.

F. Pipe: ASTM A53/A53M, Grade B, Finish black and galvanized, as indicated.

G. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A.

H. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, medium carbon plain or galvanized as noted, with matching compatible ASTM A563/A563M nuts and ASTM F436/F436M washers.

I. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563/A563M nuts and ASTM F436/F436M Type 1 washers.

J. Headed Anchor Rods: ASTM F1554 Grade 36, plain.

K. Load Indicator Washers: Provide washers complying with ASTM F959/F959M at connections requiring high-strength bolts.

L. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

M. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
   2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

N. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

O. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Shop fabricate to greatest extent possible and in as large of sections as possible to minimize field splicing and assembly of units. Disassemble units only as required for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Splice members only where indicated and approved on the Shop Drawings.

C. All copes, miters, and butt cuts in surfaces that will remain exposed to view are to be made with uniform gaps of 1/2 inch if shown as an open joint in the Drawings, or in uniform contact if shown in the Drawings without a gap.

D. Continuously seal joined members by continuous welds.

E. Where fillet welds are exposed and 1/2 inch or larger, grind welds smooth.

F. Grind butt and plug welds flush; dress all exposed welds.

G. Fabricate connections for bolt, nut, and washer connectors.

2.03 FINISH

A. Prepare structural component surfaces in accordance with SSPC-SP 1 and SSPC-SP 2.

B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.
   1. After inspection and approval and before leaving the shop, clean steel work by hand wire brushing or by other means elected by the fabricator, of loose mill scale, loose rust, weld slag or flux deposit, dirt and other foreign matter. Remove oil and grease deposits with solvent.

2. Prepare steel members exposed to view and painted by filling holes, sanding, etc, to produce a smooth uniform surface.
3. After cleaning, apply one coat of shop prime paint thoroughly and evenly to dry surfaces by brush, spray, roller coating, flow coating, or dipping, at the election of the fabricator.
4. Surfaces within 2 inches of any field weld, high strength bolts, or welded studs to be free of materials that would prevent proper attachment or produce objectionable fumes while welding is being done. if shop painted, wire brush surfaces to be welded in the field before welding to reduce the paint film to a minimum.

C. Galvanize steel products that will be exposed to exterior. Galvanize after fabrication.
1. Galvanize structural steel members to comply with ASTM A123/A123M.
2. Galvanize structural steel hardware to comply with ASTM A153/A153M.
3. See Structural Notes for additional requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

A. Erect structural steel in compliance with AISC 303.

B. Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Field weld components and shear studs indicated on shop drawings.

D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".

E. Do not field cut or alter structural members without approval of Architect.
1. Do not use gas-cutting torches for correcting fabrication errors in the structural framing. Cutting will be permitted only on secondary members which are not under stress, as approved by the Architect. When gas cutting is permitted, finish the sections equal to a sheared appearance.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

B. See Structural Drawings for required testing and inspection for high-strength bolts and welded connections.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items.

B. Gates.

C. Miscellaneous steel trim.

D. Downspouts.

E. Woven wire mesh.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

H. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2023.

I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

J. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

M. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.03 ADMINISTRATIVE REQUIREMENTS

A. See Structural Drawings for additional requirements.

B. In the event of conflicting requirements between structural notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.05 QUALITY ASSURANCE

A. Design all bidder-designed elements under direct supervision of a Professional Engineer experienced in design of this work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS - GENERAL

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

2.02 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black and hot-dip galvanized finish, as indicated.

E. Fasteners: Provide zinc-coated fasteners for exterior use and where built into exterior walls. Provide stainless steel fasteners when in contact with presssure treated lumber, except at lumber treated with permapost Hi-Clear II.
   1. Select fasteners for the type, grade and class required.

F. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.

G. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

H. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

I. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

J. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.03 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site to minimize field splicing and assembly of units. Disassemble units only as required for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Exposed Mechanical Fastenings: Use concealed fasteners wherever possible. Where exposed mechanical fasteners are required, provide exposed fasteners of type shown, or if not shown, use flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
   1. Coordinate with supporting structure.
   2. Fabricate and space anchoring devices to provide adequate support for intended use.

2.04 FABRICATED ITEMS

A. Downspouts:
   1. Galvanized Schedule 40 steel pipe.
   2. Provide Fernco or approved coupler at transition.

3. Prime with zinc-rich primer; See Section 09 91 13.

B. Wire Mesh Infill Gate Panels : Woven wire mesh.
1. Thickness: 10 gauge.
2. Weave: Crimp weave with 1 inch square openings; 77.6% open area.
3. Surface Finish: Galvanized for field painting.
4. Basis of Design: The Western Group; Soundwaves II: www.architecturalwire.com.

C. Loose bearing and leveling plates:
1. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
2. Galvanize plates.

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

2.05 FINISHES - STEEL

A. All steel components exposed to the exterior and to the weather to be galvanized.

B. Prime paint steel items.
1. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.

C. Prepare surfaces to be primed in accordance with SSPC-SP2.

D. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

E. Prime Painting: One coat.

F. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

G. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

H. Field Finishing: Provide two top coats; see Section 09 91 13.

2.06 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Perform field welding in accordance with AWS D1.1/D1.1M.

D. Obtain approval prior to site cutting or making adjustments not scheduled.

E. After erection, prime welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Free-standing railings at stairs.

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

E. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

F. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 50 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

D. Allow for expansion and contraction of members and building movement without damage to connections or members.

E. Dimensions: See drawings for configurations and heights.

F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

G. Provide mechanical and welding fittings where indicated to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

A. Steel Pipe: ASTM A53/A53M Grade B Schedule 40, galvanized finish, for field painting.

B. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

D. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.

E. Galvanizing: In accordance with requirements of ASTM A123/A123M.
   1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
   1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Install railings in compliance with ADA Standards for accessible design at applicable locations.

D. Anchor railings securely to structure.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Nonstructural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Roofing nailers.

E. Preservative treated wood materials.

F. Miscellaneous framing and sheathing.

G. Concealed wood blocking, nailers, and supports.

H. Miscellaneous wood nailers, furring, and grounds.

I. Tongue and groove decking.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).

D. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

E. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).

F. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing; 2019a.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

H. AWPA U1 - Use Category System: User Specification for Treated Wood; 2024.

I. PS 1 - Structural Plywood; 2023.

J. PS 2 - Performance Standard for Wood Structural Panels; 2018.

K. PS 20 - American Softwood Lumber Standard; 2021.

L. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; 2018.

1.03 ADMINISTRATIVE REQUIREMENTS

A. See Structural Drawings for additional requirements.

B. In the event of conflicting requirements between structural notes and the requirements in this Specification, the most stringent requirements apply.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

C. Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.

D. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. In the event of conflicting requirements between applicable codes, regulations, structural notes and the requirements in this Specification, the most stringent requirements apply.

1.06 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
   3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Wood fabricated from old growth timber is NOT permitted.

C. For composite wood products on the interior of the building, provide products complying with composite wood indoor emission requirements in Section 01 61 16. Meet CARB Standard for Ultra-Low Emitting Formaldehyde (ULEF) resins or No Added Formaldehyde (NAF) certification.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: West Coast Lumber Inspection Bureau; WCLIB (GR).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Exterior Stud Framing (2 by 2 through 2 by 8):
   1. Species: Douglas Fir-Larch.
   2. Grade: See Structural Notes in the Drawings .

D. Interior Stud Framing (2 by 2 through 2 by 6):
   1. Species: Douglas Fir-Larch.
   2. Grade: See Structural Notes in the Drawings.

E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
   1. Species: Douglas Fir-Larch.
   2. Grade: See Structural Notes in the Drawings.

F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Certification Agency: American Plywood Association (APA).

1. Identify all plywood materials for species, grade and glue type by the stamp of the APA. Grade mark and trademark to appear on each piece of material. For exposed panels, stamps to be out of sight or substituted with a certificate of compliance.

B. Lumber Decking: Fabricated to AITC 112.
   1. Species: Douglas Fir, graded under SPIB (GR) rules as AITC Select quality.
   2. Size: 3 by 6 inches, nominal.
   3. Pattern: AITC standard beveled V-joint with single tongue and groove.
   4. Moisture Content: 15 percent, maximum.

C. Plywood for Catwalk/Press Box Gangway: Plywood, PS 1, Marine Grade.
   1. See notes on Structural Drawings for additional requirements.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere, unless noted otherwise.
   2. See Structural Notes and Drawings.

B. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
   1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.

C. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.
   1. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 30 days of weather exposure.

D. Subfloor Adhesives: Gap-filling construction adhesive for bonding wood structural panels to wood-based floor system framing; complying with ASTM D3498.

E. General Purpose Construction Adhesives: Comply with ASTM C557.

F. Air Barrier: See Section 07 27 00.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
   1. Products:
      a. Koppers Performance Chemicals, Inc: www.koppersperformancechemicals.com/#sle.
      b. Viance, LLC; Preserve ACQ: www.treatedwood.com/#sle.
      c. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Preservative Treatment for Concealed Conditions: Zinc Borate or SBX/DOT treatment.
      a. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
      b. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      c. Treat lumber in contact with roofing or flashing.
      d. Treat lumber in contact with masonry or concrete.
      e. Treat lumber in other locations as indicated.

3. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
    a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
    b. Treat lumber in contact with roofing, flashing, or waterproofing.
    c. Treat lumber in contact with masonry or concrete.
    d. Treat lumber in other locations as indicated.
4. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
    a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
    b. Treat plywood in contact with roofing, flashing, or waterproofing.
    c. Treat plywood in contact with masonry or concrete.
5. Preservative Treatment for Exposed and Exterior Conditions: Permapost Products Company; Kleargard 25: www.permapost.com.
    a. Preservative Pressure Treatment for above ground, exterior and interior applications. Treating Process: AWPA T1-14 standard 2.1, 2.2 or latest revision.
    b. Preservative: Water based emulsion containing propiconazole, tebucanazole, imidicloprid (PTI), permethrin, and IPBC.
    c. Treatment Specifications: Minimum specified average retention of 0.24 pounds per cubic foot (pcf) of the combined actives meet the following standards: AWPA PTI UC3B Jurisdiction, AS 1604.1 water-based Azole with Permethrin H3 Jurisdiction and TRU-CORE 1.
        1) Treat lumber at exterior locations and lumber exposed to view.

PART 3 EXECUTION

3.01 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual, whichever is most stringent.

E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.

F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

G. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

H. Frame corners with triple studs to provide adequate attachment for sheathings and other applied materials.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.
   1. Concealed spaces of stud walls and partitions at ceiling and floor levels and at 10-foot intervals horizontal and vertical.
   2. At all interconnections between concealed vertical and horizontal spaces.
   3. Openings around vents, pipes, ducts, chimneys and similar openings that afford a passage for fire at ceiling and floor levels with non-combustible materials.
   4. Openings between attic spaces and chimney chases for factory-built chimneys.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Toilet partitions.
   7. Wall-mounted door stops.
   8. Tackboards and markerboards.
   9. Wall paneling and trim.
   10. Mechanically attached signage.
   11. Projection screens and projectors.
   12. Wall-mounted bike racks.
   13. Miscellaneous wall-mounted equipment and accessories, including Owner furnished and/or Owner installed items.

3.05 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

3.06 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.

B. Underlayment: Secure to subflooring with nails and glue.
   1. Fasteners: Use galvanized fasteners, in lengths long enough to penetrate at least 75 percent into the subflooring. Fasteners are not to protrude through the bottom side of the subfloor. Do not use uncoated, cement-coated or rosin-coated fasteners.

2. At locations where resilient flooring will be installed, fill and sand splits, gaps, and rough areas.

C. Lumber Decking:
1. Install decking perpendicular to framing members, with ends staggered over firm bearing.
2. Fit butt end deck joints occurring between support members with metal splines to maintain tight, aligned joints.
3. Engage decking tongue and groove edges.
4. Secure with fasteners. Side spike planks together, through pre-drilled holes.
5. Maintain decking joint space of 1/16 inch maximum.

D. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails or screws.

3.07 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

3.08 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.09 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

3.10 CLEANING

A. Waste Disposal: See Section 01 74 19 - Construction Waste Management and Disposal.
1. Comply with applicable regulations.
2. Do not burn scrap on project site.
3. Do not burn scraps that have been pressure treated.
4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Hardware and attachment accessories.

1.02 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. PS 1 - Structural Plywood; 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in, electrical rough-in, installation of associated and adjacent components, and adjacent components.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.02 SUSTAINABILITY CHARACTERISTICS

A. Wood fabricated from old growth timber is not permitted.

B. Provide composite wood products complying with composite wood indoor emission requirements in Section 01 61 16. Meet CARB Standard for Ultra-Low Emitting Formaldehyde (ULEF) resins or No Added Formaldehyde (NAF) certification.

2.03 SHEET MATERIALS

A. Softwood Plywood, One side exposed to view: Douglas fir species, veneer core; PS 1 Grade A-B, glue type as recommended for application.

2.04 FASTENINGS

A. Adhesive: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Fasteners: Of size and type to suit application; <> finish in concealed locations and <> finish in exposed locations.

2.05 ACCESSORIES

A. Primer: Alkyd primer sealer.

B. Wood Filler: Compatible with topcoat, tinted to match surface finish color where applicable.

2.06 FABRICATION

A. Field verify required dimensions prior to fabrication.

B. Shop sand prior to delivery.

C. Shop assemble work for delivery to site, permitting passage through building openings.

D. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Install in as long lengths as practicable.

C. Set and secure materials and components in place, plumb and level.

D. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

E. Install components with nails at 16 inches on center, maximum spacing, unless noted otherwise.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: See Section 09 91 23.

C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

SECTION 07 11 13
BITUMINOUS DAMPPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bituminous dampproofing.

B. Protection boards.

C. Drainage panels.

1.02 REFERENCE STANDARDS

A. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).

B. ASTM D449/D449M - Standard Specification for Asphalt Used in Dampproofing and Waterproofing; 2003 (Reapproved 2021).

C. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal; 1997 (Reapproved 2018).

D. ASTM D1227/D1227M - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing; 2013, with Editorial Revision (2019).

E. ASTM D1668/D1668M - Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing; 1997a (Reapproved 2021).

F. ASTM D4479/D4479M - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007 (Reapproved 2018).

G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

H. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide properties of primer, bitumen, and mastics.

C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with at least five years of documented experience.

1.05 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application until dampproofing has cured.

PART 2 PRODUCTS

2.01 BITUMINOUS DAMPPROOFING

A. Bituminous Dampproofing: Cold-applied water-based asphalt emulsion; with or without fiber reinforcement; asbestos-free; suitable for application on vertical and horizontal surfaces.
   1. Composition - Vertical Application: ASTM D1227/D1227M Type III or ASTM D1187/D1187M Type I.
   2. Composition - Horizontal and Low-Slope Application: ASTM D1227/D1227M Type II or III.
   3. Water Vapor Permeability: 0.02 perm, maximum, measured in accordance with ASTM E96/E96M.
   4. VOC Content: Not more than permitted by local, State, and federal regulations.

5. Applied Thickness: 60 mil, minimum, wet film.
6. Products:
    a. Tremco Commercial Sealants & Waterproofing; TREMproof 260: www.tremcosealants.com
    b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Primers, Mastics, and Related Materials: Type as recommended by dampproofing manufacturer.

2.02 ACCESSORIES

A. Emulsified-Asphalt Primer: ASTM D41/D41M except diluted with water as recommended by manufacturer.

B. Asphalt-Coated Glass Fabric: ASTM D1668/D1668M, Type I.

C. Drainage Panel: 1/4-inch thick formed plastic, hollowed sandwich.

D. Termination Bar: Stainless steel termination bar (term bar) as recommended by dampproofing manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify substrate surfaces are durable, free of matter detrimental to adhesion or application of dampproofing system.

C. Verify that items penetrating surfaces to receive dampproofing are securely installed.

3.02 PREPARATION

A. Protect adjacent surfaces not designated to receive dampproofing.

B. Clean and prepare surfaces to receive dampproofing in accordance with manufacturer's instructions.

C. Do not apply dampproofing to surfaces unacceptable to manufacturer.

D. Apply mastic to seal penetrations, small cracks, or minor honeycombs in substrate.

3.03 APPLICATION

A. Perform this work in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

B. Prime surfaces in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

C. Apply bitumen by spray or roller.

D. Seal items watertight with mastic, that project through dampproofing surface.

E. Place drainage panel directly over dampproofing, butt joints, and position to ensure downward drainage.

F. Scribe and cut boards around projections, penetrations, and interruptions.

3.04 PROTECTION

A. Protect waterproofing from damage from subsequent work. Protect waterproofing materials from exposure to UV light for period in excess of that acceptable to waterproofing manufacturer; replace overexposed materials and retest.

END OF SECTION

SECTION 07 19 00
WATER REPELLENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water repellents and graffiti-resistant coatings applied to exterior and interior, masonry surfaces.

B. Pressure washing.

1.02 REFERENCE STANDARDS

A. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2023a.

B. ASTM D1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films; 2013 (Reapproved 2021).

C. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).

D. ASTM D5095 - Standard Test Method for Determination of the Nonvolatile Content in Silanes, Siloxanes and Silane-Siloxane Blends Used in Masonry Water Repellent Treatments; 1991 (Reapproved 2022).

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures and coordination and scheduling required for related work. Attendees to include: Architect, Building Envelope Consultant, Owner's Representative, Contractor's Superintendent, Masonry Subcontractors, and Others as appropriate.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide product description, details of tests performed, limitations, and chemical composition.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements for additional provisions.
   2. Extra Water Repellent Material: Two gallons of type installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience

1.06 MOCK-UPS

A. Prepare representative surface 36 by 36 inches in size using specified materials and preparation and application methods on surfaces identical to those to be coated; approved mock-up constitutes standard for workmanship.

B. For proposed substitutions, prepare side-by-side mock-ups of specified and substitute products.

C. Locate where directed.

D. Mock-up may remain as part of work.

1.07 FIELD CONDITIONS

A. Protect liquid materials from freezing.

B. Do not apply water repellent when ambient temperature or substrate temperature is lower than 50 degrees F or higher than 100 degrees F.

C. Do not apply water repellents in periods of high wind or if rain is expected within 4 hours.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide ten year manufacturer warranty for water repellent and anti-graffiti treatment.
   1. Include coverage for degradation of waterproofing ability and reduction in graffiti resistance on designated substrate.
   2. Anti-graffiti treatment warranty for protection for ten cleaning cycles over a period of 10 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Silane, Siloxane, Silane-Siloxane Blend, and Siliconate Water Repellents:
   1. Professional Products of Kansas; PWS-Super: www.watersealant.com.
   2. PROSOCO, Inc; Sure Klean Weather Seal Blok-Guard & Graffiti Control WB 6: www.prosoco.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Stain-Resistance and Sacrificial Anti-graffiti Treatment:
   1. Professional Products of Kansas; 2-coat Anti-Graffiti System: www.watersealant.com.
   2. PROSOCO, Inc; Sure Klean Weather Seal Blok-Guard & Graffiti Control WB 6: www.prosoco.com/#sle.
   3. Substitutions: See Section 01 60 00-Product Requirements.

2.02 MATERIALS

A. Water Repellent: Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.
   1. Applications: Vertical surfaces and non-traffic horizontal surfaces.
   2. Number of Coats: Verify with manufacturer.
   3. VOC Content for Interior Applications: See Section 01 61 16.
   4. VOC Content for Exterior Applications: Less than 600 g/L, when tested in accordance with ASTM D3960 or ASTM D5095.
   5. Moisture Absorption When Applied to Masonry: Five percent, maximum, when tested in accordance with ASTM C140/C140M using masonry sample completely coated with water repellent.
   6. Maintains dry appearance when wetted.

B. Anti-graffiti Treatment: Apply to all exposed concrete and masonry to a height of 10'-0" above finish floor, or as noted in the documents.
   1. Applications: Vertical surfaces and non-traffic horizontal surfaces.
   2. Number of Coats: Verify with manufacturer.
   3. VOC Content: Less than 50 g/L, when tested in accordance with ASTM D3960 or ASTM D5095.
   4. Cleaning Cycles: Minimum 25 cycles without loss of repellency when tested in accordance with ASTM D6578 - Standard Practice for Determination of Graffiti Resistance.

5. Breathability: Greater than 95% water vapor transmission when tested in accordance with ASTM D1653.
6. Surface Appearance: No appreciable difference compared to non-treated surface.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify joint sealants are installed and cured.

C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

3.02 PREPARATION

A. Protection of Adjacent Work:
   1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
   2. Protect adjacent surfaces not intended to receive water repellent.

B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.

C. Do not start work until masonry mortar substrate is cured a minimum of 60 days.

D. Remove loose particles and foreign matter.

E. Remove oil and foreign substances with a chemical solvent that will not affect water repellent.

F. Pressure wash surfaces to be coated.
   1. Firm Masonry (Concrete Masonry Units): High pressure wash at 1,500 to 4,000 psi, at 6 to 12 inches from surface.

G. Allow surfaces to dry completely to degree recommended by water repellent manufacturer before starting coating work.

H. Check the compatibility of all caulking and patching material to be used with the exterior water repellent and or the anti-graffiti coating.

3.03 APPLICATION

A. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.

B. Apply at rate recommended by manufacturer, continuously over entire surface.

C. Remove water repellent from unintended surfaces immediately by a method instructed by water repellent manufacturer.

D. Provide manufacturer's field service representative to inspect preparation and application work continuously during entire application period to ensure that manufacturer's "best practices" for preparation and application are being followed.

3.04 CLOSE-OUT ACTIVITIES

A. Demonstration: Manufacturer's representative to demonstrate the process of graffiti removal to Owner's personnel.

END OF SECTION

SECTION 07 41 13
METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal roof panel system of preformed steel panels.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2023.

D. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.

E. ASTM D4869/D4869M - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing; 2016a (Reapproved 2021).

F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

H. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005 (Reapproved 2017).

I. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; 1995 (Reapproved 2018).

J. ASTM E1680 - Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems; 2016 (Reapproved 2022).

K. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Storage and handling requirements and recommendations.
   2. Installation methods.
   3. Specimen warranty.

C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
   1. Show work to be field-fabricated or field-assembled.
   2. Include structural analysis signed and sealed by qualified structural engineer, indicating compliance of roofing system to specified loading conditions.

D. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.

E. Test Reports: Indicate compliance of metal roofing system to specified requirements.

F. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section and with at least three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

C. Special Warranty: Provide 2-year warranty for weathertightness of roofing system, including agreement to repair or replace metal roof panels that fail to keep out water commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Metal Roof Panel Manufacturers:
   1. Basis of Design: AEP Span: www.aepspan.com.
   2. Morin Corporation: www.morincorp.com/#sle.
   3. Taylor Metal Products: www.taylormetal.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:
   1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed L/180 of span length(L) when tested in accordance with ASTM E1592.
   2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
   3. Wind Uplift: Class 90 wind uplift resistance of UL 580.
   4. Air Infiltration: Maximum 0.06 cfm/sq ft at air pressure differential of 6.24 lbf/sq ft, when tested according to ASTM E1680.
   5. Water Penetration: No water penetration when tested in accordance with procedures and recommended test pressures of ASTM E1646; perform test immediately following air infiltration test.
   6. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.
   7. Minimum Roof Slope Capability: 1:12.

2.03 METAL ROOF PANELS

A. Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.

B. Metal Panels: Factory-formed panels with factory-applied finish.
   1. Steel Panels:
      a. Zinc-coated steel complying with ASTM A653/A653M; minimum G90 galvanizing.

b. Steel Thickness: Minimum 20 gauge, 0.036 inch.
2. Profile: Lapped seam, with integral sealant bead and exposed fastener system.
3. Texture: Smooth.
4. Length: Maximum possible length to minimize lapped joints. Where lapped joints are unavoidable, space laps so that each sheet spans over three or more supports.
5. Width: Maximum panel coverage of 36 inches.
6. Product: AEP Span; HR-36: www.aepspan.com.

2.04 ATTACHMENT SYSTEM

A. Exposed System: Provide manufacturer's recommended stainless steel fasteners engineered to meet performance requirements and equipped with appropriate sealant separators to provide weathertight connections that will accommodate anticipated thermal movement.

2.05 FABRICATION

A. Panels: Provide factory or field fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.

B. Joints: Provide captive gaskets, sealants, or separator strips at panel joints to ensure weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

2.06 FINISHES

A. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer’s standard line.

B. Panels to be finished on all both sides.

2.07 ACCESSORIES

A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.

B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.

C. Sealants:
1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
3. Seam Sealant: Factory-applied, non-skinning, non-drying type.

D. Underlayment: Self-adhering polymer modified asphalt sheet complying with ASTM D1970/D1970M, with strippable release film and top surface of woven polypropylene sheet.
1. Sheet Thickness: 20 to 40 mil, 0.040 inch minimum total thickness.
2. Self Sealability: Nail sealability in accordance with ASTM D1970/D1970M.
3. Low Temperature Flexibility: Comply with ASTM D1970/D1970M.
4. Water Vapor Permeance: 0.1 perm, maximum, when tested in accordance with ASTM E96/E96M using Desiccant Method (Method A).
5. Functional Temperature Range: Minus 45 degrees F to 250 degrees F.
6. Extended Exposure: Exposed for up to 120 days before installing final roof covering.
7. Products:
a. GCP Applied Technologies; Grace Ice & Water Shield HT: www.gcpat.com.

b. Henry Company; Blueskin PE200HT: www.henry.com/#sle.
c. VaproShield; SlopeShield Plus Self-Adhered: www.vaproshield.com.
d. Substitutions: See Section 01 60 00 - Product Requirements.

E. Synthetic Underlayment Wearlayer: Mechanically attached high strength woven synthetic roofing underlayment coated on both sides with slip resistant polymers.
1. Sheet Thickness: 7 mil, 0.007 inch minimum total thickness.
2. Tensile Strength: MD 96 lbs; CD 116 lbs when measured in accordance with ASTM D828.
3. Water Ponding: No percolation when tested in accordance with ASTM D779.
4. Water Transmission: When tested in accordance with ASTM D4869/D4869M .
5. Extended Exposure: Can be left exposed for up to 180 days before installing final roof covering.
6. Manufacturers:
a. GCP Applied Technologies; TRI-FLEX 15: www.gcpat.com.
b. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Broom clean wood sheathing prior to installation of roofing system.

B. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to ensure that completed roof will be free of leaks.

C. Install high temperature underlayment over entire roof surface in accordance with manufacturer's instructions.

D. Install synthetic underlayment wearlayer over high temperature underlayment over entire roof surface in accordance with manufacturer's instructions.

E. Remove protective film from surface of roof panels immediately prior to installation; strip film carefully to avoid damage to prefinished surfaces.

F. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by metal roof panel manufacturer.

G. At locations where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.03 INSTALLATION

A. Overall: Install roofing system in accordance with approved shop drawings and metal roof panel manufacturer's instructions and recommendations, as applicable to specific project conditions; securely anchor components of roofing system in place allowing for thermal and structural movement.
1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
2. Install roofing system with exposed fasteners prefinished to match panels.
3. Minimize field cutting of panels. Where field cutting is required, use methods that will not distort panel profiles. Use of torches for field cutting is prohibited.

B. Accessories: Install necessary components that are required for complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, equipment curbs, rib closures, ridge closures, and similar roof accessory items.

C. Roof Panels: Install metal roof panels in accordance with manufacturer's installation instructions, minimizing transverse joints except at junction with penetrations.
   1. Provide concealed clips at panel joints, and apply snap-on battens to provide weathertight joints.

3.04 CLEANING

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

B. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.05 PROTECTION

A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.

B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, exterior penetrations, and other items indicated in Schedule.

B. Sealants for joints within sheet metal fabrications.

C. Reglets and accessories.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.

D. ASTM B32 - Standard Specification for Solder Metal; 2020.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

F. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).

G. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate material profile, finish, gauges, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit two samples, 2 by 4 inches in size, illustrating metal finish color.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with five (5) years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. General: Sheet metal to be provided in thicknesses and gauges indicated, unless indicated otherwise in Drawings or in Schedule furnished at the end of this Section.

B. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal.

C. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal, shop pre-coated with PVDF coating.

1. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
2. Color: As selected by Architect from manufacturer's standard colors.

D. Stainless Steel: ASTM A666, Type 304 alloy, soft temper, 24 gauge, 0.025 inch thick; smooth No. 4 - Brushed finish.

2.02 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/2 inch and hemmed to form drip.

G. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.03 GUTTERS AND DOWNSPOUTS

A. Gutters: Profile as indicated.

B. Downspouts: Round profile.

C. Gutters and Downspouts: 4 inch minimum, unless otherwise indicated.

D. Accessories: Profiled to suit gutters and downspouts.
1. Gutter Supports: Brackets.
2. Downspout Supports: Pre-finished galvanized steel straps, fastened to continuous galvanized steel support as indicated in the Drawings.

E. Downspout Boots: Cast iron.

F. Seal metal joints.

2.04 EXTERIOR METAL PANEL

A. See profiles and dimensions on drawings.

2.05 ACCESSORIES

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for a complete metal flashing and trim installation.

B. Fasteners: Same material and finish as flashing, with soft neoprene washers, unless noted otherwise.

C. Primer Type: Zinc chromate.

D. Protective Backing Paint: Zinc molybdate alkyd.

E. Concealed Sealants: Non-curing butyl sealant.

F. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

G. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

H. Reglets: Surface-mounted type, galvanized steel; face and ends covered with plastic tape.

I. Solder for Galvanized Steel: ASTM B32; Sn50 type, with acid flux recommended by sheet metal manufacturer.

J. Mastic Butyl Tape: 3/32-inch by 3/8-inch.
   1. Manufacturer: Marco Industries; Mastix: www.marcoindustries.com.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Comply with drawing details.

B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..

C. Apply plastic cement compound between metal flashings and felt flashings.

D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

E. Seal metal joints watertight.

F. Solder metal joints for full metal surface contact, and after soldering wash metal clean with neutralizing solution and rinse with water.

G. Secure gutters and downspouts in place with concealed fasteners.

H. Slope gutters 1/4 inch per 10 feet, minimum.

I. Connect downspouts to downspout boots, and grout connection watertight.

J. Install isolation membrane or brake between dissimilar materials.

K. Horizontal planes to have 15-degree slope minimum.

L. Flashing terminations and transitions to have upturned end dams. End dams to be soldered or folded with no cuts for watertightness.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.05 SCHEDULE

A. Flashings at Wall Base: Stainless steel.

B. Flashings at Sills: Prefinished galvanized steel.

C. Gutters: 24-gauge prefinished galvanized steel.

D. Downspouts: Schedule 40 galvanized steel pipe, field painted. See Section 05 50 00.

E. Exterior Metal Panel: 24-gauge galvanized steel, field painted. See drawings for profile and configuration.

F. Fascia System: Prefinished galvanized steel.

G. Flashings Associated with Metal Roofing, including Eave, Gutter Edge, Gable Edge: See Section 07 41 13.

H. Roofing Penetration Flashings, for Pipes, Structural Steel, and Equipment Supports: Prefinished galvanized steel.

END OF SECTION

SECTION 07 72 35
FALL PROTECTION SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bidder-designed roof tie-down system of fall restraint and fall arrest for worker safety.

1.02 REFERENCE STANDARDS

A. ANSI Z359.1-2007 - Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

B. ANSI Z359.6-2009 - Specifications and Design Requirements for Active Fall Protection Systems

C. OSHA 1926.502 - Fall Prevention Systems Criteria and Practices.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work. Attendees to include: Architect, Owner's Representative, Contractor's Superintendent, Roofing Subcontractors, Manufacturer's Representative, and Others as appropriate.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Standard fabrication details.
   4. Installation methods.
   5. Maintenance requirements.

C. Shop Drawings: Submit detailed layout developed for this project. Show layout, profile, and anchorage details.
   1. Submit shop drawings and calculations, sealed and signed by a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located. Include the design engineer's seal and signature on each sheet of shop drawings.

D. Maintenance Data: Written instructions for maintenance of fall prevention safety devices to be included in the operation and maintenance manual.

E. In-house Test Reports: Indicate anchor fabrication compliance with performance requirements.

F. Signage: Provide laminated sign showing system layout and usage notes, to be installed per Owner's direction on site.

G. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. Firm having at least 10 years continuous experience in manufacturing fall safety equipment similar to systems specified and exhibiting records of successful in-service acceptability and performance.
   2. Firm must employ personnel dedicated to provide regularly scheduled Authorized and Competent Person Training courses as mandated by OSHA 1926 and 1910 for owner's

authorized safety personnel.

B. Professional Engineer Qualifications: A Professional Engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in designing and providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of roof anchors that are similar to those indicated for this Project in material, design and extent.

C. OSHA Standards: Comply with Occupational Safety and Health Administration Standards for the Construction Industry 29 CFR 1926.500 Subpart M (Fall Protection), and with applicable State Administrative Code safety standards for Fall Restraint and Fall Arrest.

D. Source Limitations: Obtain all roof anchors through one source from a single manufacturer.

E. Testing: Perform quality control tests for each system per manufacturer's requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

1.07 COORDINATION

A. Contractor to coordinate installation of structural deck to meet requirements of roof anchor manufacturer.

B. Contractor to coordinate installation of structural deck reinforcements and anchorages to receive fall protection anchors, including additional anchors, blocking, structural members as required per the bidder-designed system.

C. Contractor to coordinate placement of roofing system, insulation and flashing to ensure water-tight integrity to roof.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide manufacturer's standard warranty to guarantee products will be free from defects for a period of 12 months. Warranty period shall become effective on date of substantial completion.

PART 2 PRODUCTS

2.01 FALL PROTECTION SYSTEM

A. Manufacturer:
   1. Basis of Design: Guardian Fall Protection Inc; Saddle Anchor System: www.guardianfall.com.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. General:
   1. Design and Provide structural fall restraint and fall arrest system capable of withstanding loads and stresses within limits and under conditions specified in OSHA and other applicable safety codes. Provide fall protection anchors permanently attached to roof structure as required per the bidder-designed system. All anchors to are be supported on the structural steel members as shown in the contract documents. All structural loads are required to be accounted for in the design of this system and transferred into the main structural system. If any additional block, plates, stiffeners or other related structural members are required to complete the fall restraint system those items are to be included and proved in the design and shown in submittal documents.
   2. Design Requirements: Anchors and accessories comprising system of following types:
      a. Guardian Saddle Anchors, spaced as designed and indicated by manufacturer, for safety snap connection by individual workers capable of withstanding a 5,000 pound load overturning moment or safety factor of 2 meeting the requirements of OSHA 1926.502(d)(8).

3. Performance Requirements: System and components tested for the resistance of the following loads:
    a. Fall Restraint: 1 User.
    b. Fall Arrest: 1 User.
    c. Design fall protection anchors to resist a 5,000 pound load applied in any direction at maximum anchor height or provide engineered system designed meeting the requirements of OSHA 1926.502(d)(8).

C. Materials:
1. Saddle Anchor: 3-1/2 inch schedule 80 pipe, galvanized steel (size as necessary for height).

D. Manufactured Assemblies:
1. Guardian Saddle Anchors.

E. Fabrication:
1. Fabricate work true to dimension, square, plumb, level, and free from distortions or defects detrimental to appearance and performance.
2. Prepare, treat and coat galvanized metal to comply with manufacturer's written instructions. Prepare galvanized metal by removing grease, dirt, oil, flux, and other foreign matter.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine framing and substrate and verify conditions comply with structural requirements for proper system performance. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations.

B. Contractor is responsible for coordinating the installation to ensure that the system is 100% watertight.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for field inspection requirements.

B. Testing: Test on site 100% of anchors relying upon chemical adhesive fasteners using load cell test apparatus in accordance with manufacturer's written recommendations.

3.04 ADJUSTMENT AND INSPECTION

A. Ensure all manufactured anchors have been installed in accordance with fall protection manufacturer's engineering documentation and specifications.

B. Provide plan drawings with any deviations in anchor locations as installed.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 DESCRIPTION OF WORK

A. In general, seal all openings, and all other locations which normally require sealant, both interior and exterior. Seal against infiltration from air, water and insects, including but not limited to:
   1. Construction and expansion joints, joints between dissimilar materials, both interior and exterior. Joints around windows, door frames, louvers and other penetrations and openings in the exterior wall. Interior walls as detailed or specified.
   2. Note details on Drawings for additional sealant applications.

1.03 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

F. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.

H. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2020).

I. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.
   5. Substrates for which use of primer is required.
   6. Substrates for which laboratory adhesion and/or compatibility testing is required.
   7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   8. Sample product warranty.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Sealant Schedule: Submit a sealant schedule listing all sealants used on the project. Schedule to be managed and updated throughout the project and to include the following: Sealant Type, VOC Content, Substrate/Materials, Section Number, Submittal Number, and Trade Name. Use template provided at the end of this section.

E. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

F. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

G. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

H. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

I. Installation Log: Submit filled-out log for each length or instance of sealant installed.

J. Field Quality Control Log: Submit filled-out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

K. Executed warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and with at least five years of documented experience.

C. Single source responsibility for joint sealer materials: Obtain joint sealant materials from a single manufacturer for each different product required. If sealants from separate manufacturers must be used and could come in contact with each other, provide written certification from all manufacturers involved that the sealants are compatible and will adhere to each other.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

E. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
   1. Identification of testing agency.
   2. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
      a. Test date.
      b. Location on project.
      c. Sealant used.
      d. Test method used.
      e. Date of installation of field sample to be tested.
      f. Date of test.
      g. Copy of test method documents.
      h. Age of sealant upon date of testing.
      i. Test results, modeled after the sample form in the test method document.
      j. Indicate use of photographic record of test.

F. Field Quality Control Plan:
   1. Visual inspection of entire length of sealant joints.
   2. Destructive field adhesion testing of sealant joints, except interior acrylic latex sealant.

a. For each different sealant and substrate combination, allow for one test every 100 feet in the first 1,000 linear feet, and one test per 1,000 linear feet thereafter, or once per floor on each elevation.
b. If any failures occur in the first 1,000 linear feet, continue testing at frequency of one test per 500 linear feet at no extra cost to Owner.

3. Field testing agency's qualifications.
4. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

G. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.
3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
4. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
5. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
6. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

H. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Test Procedure.
1. Sample: At least 18 inches long.
2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the 1-inch mark is that distance from the substrate, the test has failed.
3. If either adhesive or cohesive failure occurs before minimum elongation, take necessary measures to correct conditions and retest; record each modification to products or installation procedures.
4. Repair failed portions of joints.

I. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or another applicable method as recommended by manufacturer.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

C. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Dow: www.dow.com/#sle.
3. Hilti, Inc: www.us.hilti.com/#sle.
4. Pecora Corporation: www.pecora.com/#sle.

5. Sika Corporation: www.usa-sika.com/#sle.
6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
7. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
8. Substitutions: See Section 01 60 00 - Product Requirements.

B. Self-Leveling Sealants:
1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
3. Dow: www.dow.com/#sle.
4. Sika Corporation: www.usa-sika.com/#sle.
5. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
6. VersaFlex: www.versaflex.com.
7. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
8. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints:
a. Seal the following joints:
1) Wall expansion and control joints.
2) Joints between doors, windows, and other frames or adjacent construction.
3) Joints between different exposed materials.
4) Other joints indicated below.
2. Interior Joints:
a. Do not seal gaps and openings in suspended ceilings
b. Do not seal through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
c. Seal the following joints:
1) Joints between door frames, window frames, and other frames and adjacent construction.
2) In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, and piping penetrations.
3) In sound-rated wall and ceiling assemblies, seal joints between wall assemblies and ceiling assemblies; between wall assemblies and other construction; between ceiling assemblies and other construction.
4) Other joints indicated below.
3. Fire Rated Joints: See Section 07 84 00.
4. Do Not Seal:
a. Intentional weep holes in masonry.
b. Joints indicated to be covered with expansion joint cover assemblies.
c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
d. Joints where sealant installation is specified in other sections.
e. Joints between suspended ceilings and walls.

B. Exterior Joints: Use nonsag nonstaining silicone sealant, unless otherwise indicated.
1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, noncuring.
2. Lap Joints between Manufactured Metal Panels: Butyl rubber, noncuring.
3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane traffic-grade sealant.

C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Nonwet Areas: Acrylic emulsion latex sealant.
2. Interior Air Seal Around Windows: Silicone sealant.

3. Floor Joints in Wet Areas: Nonsag polyurethane non-traffic-grade sealant suitable for continuous liquid immersion.
4. Joints between Tile in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant.
5. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
6. Narrow Control Joints in Interior Concrete Slabs: Self-leveling polyurea sealant.

D. Interior Wet Areas: Bathrooms, restrooms, food service areas, and janitors closets, and any area with sinks and drinking fountains; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

E. Sound-Rated Assemblies: Walls and ceilings identified as STC-rated, sound-rated, or acoustical.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 61 16.

B. Colors: Furnish and install color of exposed joint sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

C. Compatibility: Furnish and install joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

D. Use mason's sand in sealant joints in masonry walls to blend in color and texture with adjacent mortar joints.

2.04 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Applications: Exterior joints, non-paintable.
2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Color: To be selected by Architect from manufacturer's standard range.
5. Products:
   a. Dow; DOWSIL 790 Silicone Building Sealant: www.dow.com/#sle.
   b. Dow; DOWSIL 791 Silicone Weatherproofing Sealant: www.dow.com/#sle.
   c. Dow; DOWSIL 795 Silicone Building Sealant: www.dow.com/#sle.
   d. Pecora Corporation; Pecora 890 NST (Non-Staining Technology): www.pecora.com/#sle.
   e. Tremco Commercial Sealants & Waterproofing; Spectrem 1: www.tremcosealants.com/#sle.
   f. Tremco Commercial Sealants & Waterproofing; Spectrem 2: www.tremcosealants.com/#sle.
   g. Substitutions: See Section 01 60 00 - Product Requirements.

B. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Application: Interior air seal around windows.
2. Movement Capability: Plus and minus 25 percent, minimum.
3. Color: To be selected by Architect from manufacturer's standard range.
4. Products:
   a. Dow; DOWSIL 758 Silicone Weather Barrier Sealant: www.dow.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
   1. Applications: Interior joints between tile, floors, walls, and ceilings in Wet Areas.
   2. Color: White.
   3. Products:
      a. Dow; DOWSIL 786 Mildew Resistant Silicone Sealant: www.dow.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface.
   1. Applications: Interior floor joints in wet areas.
   2. Movement Capability: Plus and minus 35 percent, minimum.
   3. Color: To be selected by Architect from manufacturer's standard range.

E. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
   1. Applications: Interior wall and ceiling joints in non-wet areas and joints in sound-rated assemblies.
   2. Color: To be selected by Architect from manufacturer's full range.

F. Non-Curing Butyl Sealant: Solvent-based, single component, non-sag, non-skinning, non-hardening, non-bleeding; non-vapor-permeable; intended for fully concealed applications.
   1. Applications: Exterior lap joints in sheet metal fabrications and between manufactured metal panels.
   2. Products:
      a. Tremco Commercial Sealants & Waterproofing; TremPro JS-773: www.tremcosealants.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 SELF-LEVELING JOINT SEALANTS

A. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
   1. Applications: Control joints in exterior concrete paving.
   2. Movement Capability: Plus and minus 25 percent, minimum.
   3. Color: To be selected by Architect from manufacturer's full range.

B. Semi-Rigid Self-Leveling Polyurea Joint Filler: Two-component, 100 percent solids; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
   1. Applications: For narrow joints in exposed interior concrete slabss.
   2. Durometer Hardness, Type A: 75, minimum, after seven days when tested in accordance with ASTM D2240.
   3. Color: To be selected by Architect from manufacturer's standard colors.
   4. Joint Width, Minimum: 1/8 inch.

2.06 ACCESSORIES

A. Sealant Backing Rod, Bi-Cellular Type:
   1. Cylindrical flexible sealant backings complying with ASTM C1330 Type B.
   2. Size: 25 to 50 percent larger in diameter than joint width.
   3. Products:
      a. Nomaco, Inc; SOF Rod: www.nomaco.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
   1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
   2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
   3. Record each test on Preinstallation Adhesion Test Log as indicated.
   4. If any sample fails, review products and installation procedures, consult manufacturer, or take other measures that are necessary to ensure adhesion; retest in a different location; if unable to obtain satisfactory adhesion, report to Architect.
   5. After completion of tests, remove remaining sample material and prepare joints for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
   1. Width/depth ratio of 2:1.
   2. Neck dimension no greater than 1/3 of the joint width.
   3. Surface bond area on each side not less than 75 percent of joint width.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless

manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.

D. Destructive Adhesion Testing: If there are any failures in first 1,000 linear feet, notify Architect immediately.

E. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

F. Repair destructive test location damage immediately after evaluation and recording of results.

END OF SECTION

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Thermally insulated hollow metal doors with frames.

1.02 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. HMMA: Hollow Metal Manufacturers Association.

C. NAAMM: National Association of Architectural Metal Manufacturers.

D. SDI: Steel Door Institute.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2024.

C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2020.

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

G. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2019.

H. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

J. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

M. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.

N. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

O. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

P. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Maintain at project site copies of reference standards relating to installation of products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Curries, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Steelcraft, an Allegion brand: www.allegion.com/#sle.
   3. Stiles Custom Metal, Inc: www.stilesdoor.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Typical Door Face Sheets: Flush.
   4. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
   5. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   6. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated. Provide fire-rated door construction as indicated on door schedule.

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 3 - Extra Heavy-duty.
    b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.
    d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
    e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Door Core Material: Vertical steel stiffeners with fiberglass batts.
3. Door Thermal Resistance: R-Value of 2.7, minimum in accordance with ASTM C1363.
4. Top Closures: Flush with top of faces and edges.
5. Weatherstripping: Refer to Section 08 71 00.

C. Interior Doors, Non-Fire-Rated:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 2 - Heavy-duty.
    b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.
    d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
    e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Full profile/continuously welded type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A60/ZF180 coating.
2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
3. Weatherstripping: Separate, see Section 08 71 00.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed in accordance with ASTM A653/A653M, with A60/ZF180 coating.
2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.

E. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

F. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Field Finish: Refer to Section 09 91 13 Exterior Painting and 09 91 23 Interior Painting.

C. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.06 ACCESSORIES

A. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.

B. Silencers: As specified in Section 08 71 00 Door Hardware; Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

C. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Install door hardware as specified in Section 08 71 00.
   1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

D. Coordinate installation of electrical connections to electrical hardware items.

E. Touch up damaged factory finishes.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement and proper latching.

3.06 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

SECTION 08 33 13
COILING COUNTER DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated coiling counter doors and operating hardware.

B. Electric motor operation; wiring from electric circuit disconnect to operator to control station.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

F. ITS (DIR) - Directory of Listed Products; Current Edition.

G. NEMA MG 1 - Motors and Generators; 2021.

H. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's standard literature showing materials and details of construction and finish. Include data on electrical operation.

C. Shop Drawings: Indicate rough and actual opening dimensions, anchorage methods, hardware locations, and installation details.

D. Manufacturer's Installation Instructions: Indicate installation sequence and installation, adjustment, and alignment procedures.

E. Operation and Maintenance Data: Indicate modes of operation, lubrication requirements and frequency, and periodic adjustments required.

F. Project Record Documents: Include as-built electrical diagrams for electrical operation and connection to fire alarm system.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Coiling Counter Doors:
   1. Cornell Iron Works, Inc: www.cornelliron.com.
   2. Overhead Door Corporation: www.overheaddoor.com/#sle.
   3. The Cookson Company, Inc: www.cooksondoor.com.
   4. Wayne-Dalton, a Division of Overhead Door Corporation: www.wayne-dalton.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 COILING COUNTER DOORS

A. Coiling Counter Metal Doors, Non-Fire-Rated: Stainless steel slat curtain.
   1. Basis-of-Design Product: Cornell Iron Works, Inc; ESC20: www.cornellironworks.com.
   2. Opening Sizes: As indicated in the drawings.
   3. Mounting: Interior face mounted.

4. Nominal Slat Size: 1-1/4" to 2-1/2" wide.
5. Slat Profile: Flat.
6. Finish, Galvanized Steel: Factory powder coated.
7. Guides: Formed track; same material and finish unless otherwise indicated.
8. Hood Enclosure: Manufacturer's standard; finished to match curtain.
9. Manual hand chain lift operation and electric operation; see drawings for locations.

2.03 COMPONENTS

A. Metal Curtain Construction: Interlocking, single-thickness slats.
   1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
   2. Curtain Bottom: Fitted with angles to provide reinforcement and positive contact in closed position.
   3. Steel Slats: ASTM A653/A653M galvanized steel sheet, with minimum G90/Z275 coating; minimum thickness 16 gauge, 0.06 inch.

B. Guide Construction: Continuous, of profile to retain door in place, with mounting brackets of same metal.
   1. Guides for Galvanized Curtains: ASTM A36/A36M steel angles, size as indicated, hot-dip galvanized per ASTM A123/A123M.

C. Hood Enclosure: Internally reinforced to maintain rigidity and shape.

D. Lock Hardware:
   1. Cylindrical Locking Mechanism: Latchset lock cylinder, specified in Section 08 71 00.

E. Roller Shaft Counterbalance: Steel pipe and torsion steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

2.04 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Listed and classified by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction (AHJ) as suitable for purpose specified and indicated.
   1. Provide interlock switches on motor operated units.

B. Electric Operators:
   1. Mounting: Side mounted.
   2. Motor Enclosure: NEMA MG 1.
   3. Motor Rating: As recommended by manufacturer; continuous duty.
   4. Motor Voltage: 110-120 VAC, single phase, 60 Hz.
   5. Opening Speed: 6 inches per second.
   6. Manual override in case of power failure.

C. Control Station: Standard three button (OPEN-STOP-CLOSE) momentary control for each electrical operator.
   1. Controls: 24 VAC circuit.
   2. Surface mounted.

D. Safety Edge: Located at bottom of curtain, full width, electro-mechanical sensitized type, with internal wireless transmitter signaling controller to stop and reverse door direction upon striking object.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that adjacent construction is suitable for door installation.

B. Verify that door opening is plumb, header is level, and dimensions are correct.

C. Notify Architect of any unacceptable conditions or varying dimensions.

D. Commencement of installation indicates acceptance of substrate and door opening conditions.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of electrical service with Section 26 05 83.

F. Complete wiring from disconnect to unit components.

3.03 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Maximum Variation From Plumb: 1/16 inch.

C. Maximum Variation From Level: 1/16 inch.

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

3.04 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.05 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for hollow metal doors.

B. Electrically operated and controlled hardware.

C. Lock cylinders for doors that hardware is specified in other sections.

D. Thresholds.

E. Weatherstripping and gasketing.

F. Gate locks.

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. BHMA (CPD) - Certified Products Directory; Current Edition.

C. BHMA A156.1 - Standard for Butts and Hinges; 2021.

D. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.

E. BHMA A156.3 - Exit Devices; 2020.

F. BHMA A156.4 - Door Closers and Pivots; 2024.

G. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.

H. BHMA A156.6 - Standard for Architectural Door Trim; 2021.

I. BHMA A156.7 - Template Hinge Dimensions; 2016.

J. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.

K. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2022.

L. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.

M. BHMA A156.21 - Thresholds; 2019.

N. BHMA A156.22 - Standard for Gasketing; 2021.

O. BHMA A156.23 - Electromagnetic Locks; 2022.

P. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2023.

Q. BHMA A156.31 - Electric Strikes and Frame Mounted Actuators; 2024.

R. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

S. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

T. DHI (KSN) - Keying Systems and Nomenclature; 2019.

U. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.

V. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.

W. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

X. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

Y. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.

Z. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

AA. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.

BB. UL (DIR) - Online Certifications Directory; Current Edition.

CC. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

DD. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

C. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

D. Keying Requirements Meeting:
   1. Attendance Required:
      a. Contractor.
      b. Owner.
      c. Architect.
      d. Hardware Installer.
   2. Agenda:
      a. Establish keying requirements.
      b. Verify locksets and locking hardware are functionally correct for project requirements.
      c. Verify that keying and programming complies with project requirements.
      d. Establish keying submittal schedule and update requirements.
   3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system.
   4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
   5. Deliver established keying requirements to manufacturers.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project. Include construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. Provide complete description for each door listed.
   3. Include account of abbreviations and symbols used in schedule.

D. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and/or Electrified Hardware Consultant (EHC).
   2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.

3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.

E. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

F. Keying Schedule:
1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least five years of documented experience in the Project area.

B. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and/or Electrified Hardware Consultant (EHC) to assist in work of this section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
1. Closers: Thirty years, minimum.
2. Exit Devices: Ten years, minimum.
3. Locksets and Cylinders: Ten years, minimum.
4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DOOR HARDWARE SUPPLIERS

A. American Direct: www.americandirect.com.

B. Bell Hardware: www.bellhardware.com.

C. Chown Hardware: www.chownhardware.com.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
2. Accessibility: ADA Standards and ICC A117.1.
3. Applicable provisions of NFPA 101.
4. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
5. Listed and certified compliant with specified standards by BHMA (CPD).
6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.

E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Section 08 71 01 - Hardware Groups for description of hardware sets.

F. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
   3. Fire-Rated Applications: Comply with NFPA 80.
      a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
      b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.03 HINGES

A. Manufacturers:
   1. McKinney; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Ives, an Allegion brand: www.allegion.com/us.
   3. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Hinges: Comply with BHMA A156.1, Grade 1.
   1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
      a. Provide hinge width required to clear surrounding trim.
   2. Provide hinges on every swinging door.
   3. Provide following quantity of butt hinges for each door:
      a. Doors up to 60 inches High: Two hinges.
      b. Doors From 60 inches High up to 90 inches High: Three hinges.
      c. Doors 90 inches High up to 120 inches High: Four hinges.

2.04 EXIT DEVICES

A. Manufacturers:
   1. Von Duprin, an Allegion brand: www.allegion.com/us/#sle.
   2. Substitutions: Not permitted.

B. Exit Devices: Comply with BHMA A156.3, Grade 1.
   1. Lever design to match lockset trim.
   2. Provide cylinder with cylinder dogging or locking trim.
   3. Provide exit devices properly sized for door width and height.
   4. Provide strike as recommended by manufacturer for application indicated.
   5. Provide mullion angle brackets for installation at narrow stop frames.
   6. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.05 ELECTRIC STRIKES

A. Manufacturers:
   1. Von Duprin, an Allegion brand: www.allegion.com/us.

2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Electric Strikes: Comply with BHMA A156.31, Grade 1.
1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.
2. Provide non-handed 24 VDC electric strike suitable for door frame material and scheduled lock configuration.

2.06 ELECTROMAGNETIC LOCKS

A. Manufacturers:
1. Schlage Electronics, an Allegion brand: www.allegion.com/us.
2. Securitron; an Assa Abloy Group company: www.assaabloydss.com/#sle.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Electromagnetic Locks: Comply with BHMA A156.23, Grade 1.
1. Holding Force: 600 lbs, minimum.
2. Voltage: 12 VDC, and provide power supplies by same manufacturer as locks.
3. Provide electromagnetic locks for fire-rated doors in compliance with UL 10C.
4. Mounting: Surface mounted to door and frame on secure side, with fasteners, brackets, and spacer bars as required for application.

2.07 LOCK CYLINDERS

A. Manufacturers:
1. Schlage, an Allegion brand: www.allegion.com/us.
2. Substitutions: Not permitted.

B. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
1. Provide standard, electronic, conventional, full size interchangeable core (FSIC), and small format interchangeable core (SFIC) type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
2. Provide cylinders from same manufacturer as locking device.
3. Provide cams and/or tailpieces as required for locking devices.

2.08 CYLINDRICAL LOCKS

A. Manufacturers:
1. Schlage, an Allegion brand: www.allegion.com/us/#sle.
2. Substitutions: Not permitted.

B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
1. Bored Hole: 2-1/8 inch diameter.
2. Latchbolt Throw: 1/2 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
a. Finish: To match lock or latch.

2.09 MORTISE LOCKS

A. Manufacturers:
1. Schlage, an Allegion brand: www.allegion.com/us/#sle.
2. Substitutions: Not permitted.

B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.
1. Latchbolt Throw: 3/4 inch, minimum.
2. Deadbolt Throw: 1 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
a. Finish: To match lock or latch.

2.10 DOOR PULLS AND PUSH PLATES

A. Manufacturers:
   1. Ives, an Allegion brand: www.allegion.com/us.
   2. Tice Industries: www.ticeindustries.com.
   3. Trimco: www.trimcohardware.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Door Pulls and Push Plates: Comply with BHMA A156.6.
   1. Material: Aluminum, unless otherwise indicated.
   2. Provide door pulls and push plates on doors without a lockset, latchset, exit device, or auxiliary lock unless otherwise indicated.
   3. On solid doors, provide matching door pull and push plate on opposite faces.

2.11 CLOSERS

A. Manufacturers; Surface Mounted:
   1. LCN, an Allegion brand: www.allegion.com/us/#sle.
   2. Substitutions: Not permitted.

B. Closers: Comply with BHMA A156.4, Grade 1.
   1. Type: Surface mounted to door.
   2. Provide door closer on each exterior door.
   3. Provide door closer on each fire-rated and smoke-rated door.
      a. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
   4. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
   5. At corridor entry doors, mount closer on room side of door.
   6. At outswinging exterior doors, mount closer on interior side of door.

2.12 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:
   1. Rixson; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Glynn-Johnson, an Allegion brand: www.allegion.com/us/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
   1. Provide stop for every swinging door, unless otherwise indicated.

2.13 AUTOMATIC OPERATORS

A. Manufacturers:
   1. LCN, an Allegion brand: www.allegion.com/us/#sle.
   2. Substitutions: Not permitted.

B. All system wiring to be concealed within door frame and surrounding wall construction. Surface mounted wire-mold or conduit is not acceptable.

C. Coordinate rough-in locations, voltage, and wiring requirements with Electrical Contractor.

D. Provide blocking for space between operator back plate and face frame as required.

2.14 ACTUATOR SWITCHES

A. Manufacturers:
   1. LCN, an Allegion brand: www.allegion.com/us/#sle.
   2. Substitutions: Not permitted.

B. Locate actuator wall plates and switches as noted in the drawings or as directed by the Architect.

2.15 KICK PLATES

A. Manufacturers:
   1. Ives, an Allegion brand: www.allegion.com/us/#sle.
   2. Tice Industries, Inc: www.ticeindustries.com.
   3. Trimco: www.trimcohardware.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
   1. Height: As specified in Section 08 71 01 - Hardware Groups.
   2. Width: 2 inch less door width (LDW) on push side of door.

2.16 FLOOR STOPS

A. Manufacturers:
   1. Ives, an Allegion brand: www.allegion.com/us.
   2. Trimco: www.trimcohardware.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Type: Manual hold-open, with pencil floor stop.
   2. Material: Brass or bronze housing with rubber insert.

2.17 WALL STOPS

A. Manufacturers:
   1. Ives, an Allegion brand: www.allegion.com/us.
   2. Trimco: www.trimcohardware.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide wall stops to prevent damage to wall surface upon opening door.
   2. Type: Bumper, concave, wall stop.
   3. Material: Brass, bronze or stainless housing with rubber insert.

2.18 ASTRAGALS

A. Manufacturers:
   1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. National Guard Products, Inc: www.ngpinc.com/#sle.
   3. Zero International, Inc: www.zerointernational.com/#sle.

B. Astragals: Comply with BHMA A156.22.
   1. Type: Split, two parts, and with sealing gasket.
   2. Material: Aluminum, with neoprene weatherstripping.
   3. Provide non-corroding fasteners at exterior locations.

2.19 THRESHOLDS

A. Manufacturers:
   1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. National Guard Products, Inc: www.ngpinc.com/#sle.
   3. Zero International, Inc: www.zerointernational.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Thresholds: Comply with BHMA A156.21.
   1. Provide threshold at each exterior door, unless otherwise indicated.
   2. Type: Flat surface.

3. Material: Aluminum.
4. Threshold Surface: Fluted horizontal grooves across full width.
5. Field cut threshold to profile of frame and width of door sill for tight fit.
6. Provide non-corroding fasteners at exterior locations.

2.20 WEATHERSTRIPPING AND GASKETING

A. Manufacturers:
1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. National Guard Products, Inc: www.ngpinc.com/#sle.
3. Zero International, Inc: www.zerointernational.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Self-adhesive, unless otherwise noted in the hardware groups.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.
4. Provide gasketing for smoke and draft control doors (Indicated as "S" on Drawings) that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
5. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
6. Provide door bottom sweep on each exterior door, unless otherwise indicated.
7. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.21 SILENCERS

A. Manufacturers:
1. Ives, an Allegion brand: www.allegion.com/us/#sle.
2. Trimco: www.trimcohardware.com.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
3. Material: Rubber, gray color.

2.22 KEY CONTROL SYSTEMS

A. Manufacturers:
1. Schlage, an Allegion brand: www.allegion.com.
2. Substitutions: Not permitted.

B. Key Control Systems: Comply with guidelines of BHMA A156.28.
1. Provide keying information in compliance with DHI (KSN) standards.
2. Keying: Master keyed.
3. Include construction keying and control keying with removable core cylinders.
4. Supply keys in following quantities:
   a. 4 each Master keys.
   b. 10 each Construction keys.
   c. 2 each Construction Control keys.
   d. 2 each Change keys for each keyed core.
5. Deliver keys with identifying tags to Owner by security shipment direct from hardware supplier.
6. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent

keys "Do Not Duplicate."

7. Owner or Owner's agent install permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

2.23 FINISHES

A. Finishes: Identified in Section 08 71 01 - Hardware Groups.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware for smoke and draft control doors in accordance with NFPA 105.

C. Use templates provided by hardware item manufacturer.

D. Do not install surface mounted items until application of finishes to substrate are fully completed.

E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.

1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
2. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
3. Mounting heights in compliance with ADA Standards:

F. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 01 40 00 - Quality Requirements.

B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

A. Adjust work under provisions of Section 01 70 00 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

D. Adjust closers and hardware after mechanical systems have been balanced to comply with allowable speeds and opening forces outlined in ICC A117.1.

E. In the event that hardware installation is made more than one month prior to acceptance or occupancy, perform final check and adjustment of hardware during the week prior to acceptance or occupancy.

3.05 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

A. Protect finished Work under provisions of Section 01 70 00 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 08 71 01
HARDWARE GROUPS

HARDWARE GROUP NO. 01

001

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	GATE PIVOT/CLOSER	MAMMOTH HD		BLK	LOX
1	EA	PANIC HARDWARE	LD-98-NL-OP-110MD-WH		626	VON
1	EA	RIM CYLINDER	12E72 RP		626	BES
1	EA	ELECTRIC STRIKE	6300 FSE 12/24 VAC/VDC	✓	630	VON
1	EA	LONG DOOR PULL	9266 36" O		630-316	IVE
1	EA	WALL STOP/HOLDER	WS45		626	IVE
4	EA	SILENCER	SR66		GRY	IVE
1	EA	ACCESS CONTROL	PROVIDED BY DIV 28			

GATE CANNOT BE WIDER THAN 48" PER CODE AND MUST NOT WEIGH MORE THAN 250LBS. MOUNT WALL STOP/HOLDER AT 180 DEGREES ON THE FENCE BOTTOM HORIZONTAL RAIL.

HARDWARE GROUP NO. 02

002

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	GATE PIVOT/CLOSER	MAMMOTH HD		BLK	LOX
1	EA	STOREROOM LOCK- NO LEVERS	45H7D- LESS TRIM		626	BES
1	EA	ELECTRIC STRIKE	6210 FSE CON 24VDC	✓	630	VON
1	EA	LONG DOOR PULL	9266 36" O		630-316	IVE
1	EA	WALL STOP/HOLDER	WS45		626	IVE
4	EA	SILENCER	SR66		GRY	IVE
1	EA	WIRE HARNESS	CON-6W (FROM EPT TO INCOMING POWER)	✓		SCH
1	EA	ACCESS CONTROL	PROVIDED BY DIV 28			

GATE CANNOT BE WIDER THAN 48" PER CODE AND MUST NOT WEIGH MORE THAN 250LBS. MOUNT WALL STOP/HOLDER AT 180 DEGREES ON THE FENCE BOTTOM HORIZONTAL RAIL. THE PULL SIDE OF THIS GATE IS BLANK- NO PULL OR LEVER. THIS IS NOT AN EGRESS PATH.

HARDWARE GROUP NO. 03

019 035B

PROVIDE EACH RU DOOR(S) WITH THE FOLLOWING:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1		HARDWARE BY DOOR MANUFACTURER		

HARDWARE GROUP NO. 04

034A 034B

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		630	IVE
1	EA	OFFICE LOCK	9K37AB14DS3		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A-223		A	ZER

HARDWARE GROUP NO. 05

035A

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	STOREROOM LOCK	9K37D14DS3		626	BES
1	EA	LOCK GUARD	LG13		630	IVE
1	EA	CLOSER W/STOP ARM	4111 SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR SWEEP	8197AA		AA	ZER
1	EA	THRESHOLD	65A-223		A	ZER

END OF SECTION

SECTION 09 67 00
FLUID-APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid-applied flooring.

1.02 REFERENCE STANDARDS

A. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.

C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and application rate for each coat.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.05 FIELD CONDITIONS

A. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.

PART 2 PRODUCTS

2.01 FLUID-APPLIED FLOORING SYSTEMS

A. Fluid-Applied Flooring, Type EF-1: Two-part epoxy, water-based, without aggregate.
   1. System Thickness: 4-8 mils, nominal, dry film thickness (DFT).
   2. Sheen: Satin.
   3. Color: As indicated on drawings.
   4. Products:
      a. Sherwin-Williams Company; Armorseal 8100 Waterbased Epoxy: www.protective.sherwin-williams.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACCESSORIES

A. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.

B. Primer: Type recommended by fluid-applied flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.

B. Verify that vertical surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive flooring.

C. Verify that wood surfaces have 12 percent maximum moisture content.

3.02 PREPARATION

A. Prepare concrete surfaces according to ICRI 310.2R, CSP 3.

B. Prepare wood base surfaces. Wipe off dust and grit prior to priming. Fill nail holes and cracks. Back prime concealed surfaces before installation.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

E. Apply primer to surfaces required by flooring manufacturer.

3.03 INSTALLATION - FLOORING

A. Apply in accordance with manufacturer's instructions.

B. Apply each coat to minimum thickness required by manufacturer.

C. Finish to smooth level surface.

D. Cove at wood bases at lockers.

3.04 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Barricade area to protect flooring until fully cured.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Exposed surfaces of steel lintels and ledge angles.
   3. Mechanical and Electrical:
      a. On the roof and outdoors, paint equipment exposed to weather or to view, including factory-finished materials.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non-metallic roofing and flashing.
   6. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
   7. Floors, unless specifically indicated.
   8. Ceramic and other types of tiles.
   9. Glass.
   10. Concealed pipes, ducts, and conduits.

1.02 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.03 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2023.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

D. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2020.

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

F. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

G. SSPC-SP 2 - Hand Tool Cleaning; 2018.

H. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

I. SSPC-SP 13/NACE No.6 - Surface Preparation of Concrete; 2018.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit two paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified and requirements of Contract Documents and are compatible with applicable substrates and with specified primers and top coats.

E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used and color samples of each color and finish used.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Provide in new, unopened containers, clearly labeled with color name and formula in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.
   1. Contractor to maintain a qualified crew of painters throughout the duration of the Work. Maintain at least one qualified journeyperson at all times during execution of the work of this section and to direct all work performed under this section. Journeyperson to be thoroughly familiar with the specified requirements and the materials and methods needed for their execution.
   2. All materials preparation and workmanship to conform to requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute (hereafter referred to as the MPI Painting Manual) as issued by the MPI Accredited Quality Assurance Association having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

B. Paints:
   1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
   2. Miller Paint Company: www.millerpaint.com.
   3. Rodda Paint Company: www.roddapaint.com.

C. Primer Sealers: Same manufacturer as top coats.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.
   4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: As indicated in Color Schedule.
   1. Extend colors to surface edges; colors may change at any edge as directed by Architect.

2.03 PAINT SYSTEMS - EXTERIOR

A. Wood, Opaque, Latex, 3 Coat:
   1. Application: Existing stadium benches.
   2. One coat of latex primer sealer.
   3. Semi-gloss: Two coats of latex enamel; Sherwin-Williams ArmorSeal Tread-Plex Acrylic Floor Coating.

B. New CMU/Concrete, Latex, 3 Coat:
   1. One coat of block filler; Sherwin-Williams Pro Industrial Heavy Duty Block Filler, B42W150.
   2. Two coats of latex enamel; Sherwin-Williams Super Paint Exterior, Satin.

C. Previously Coated CMU/Concrete, Vertical Surfaces, Latex, 2 Coat:
   1. Two coats of latex enamel; Sherwin-Williams Super Paint Exterior, Satin.

D. Concrete, Walking Surfaces, Epoxy:
   1. See Section 09 67 00 - Fluid-Applied Flooring.

E. Ferrous Metals, Primed including Hollow Metal Doors/Frames, Latex, 2 Coat:
   1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
   2. Two top coats: Exterior Latex/Acrylic:
      a. Products:
         1) Sherwin-Williams Water Based Alkyd Urethane, B53 Series, Semi-gloss.

F. Ferrous Metals, including Handrails, 3 Coat:
   1. One coat galvanize primer:
      a. Sherwin-Williams Pro Industrial Pro-Cryl Primer.
   2. Two top coats: Exterior Waterbased Urethane:
      a. Sherwin-Williams Pro Industrial WB Acrolon 100, B65 Series, Gloss.

G. Exposed Steel, High Performance, including existing Metal Trusses, Cable Ties, and Downspouts:
   1. One prime coat: Sherwin-Williams Kem Kromic B50 Series.
   2. Two top coats: Sherwin-Williams Pro Industrial WB Acrolon 100, B65 Series at 1.8-3.6 mils DFT per coat; Gloss.

2.04 PRIMERS

A. Primers: Provide primers as listed in paint systems above, unless other primer is required or recommended by manufacturer of top coats for specific substrate.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Clean concrete according to ASTM D4258. Allow to dry.
   3. Prepare surface as recommended by top coat manufacturer and in accordance with SSPC-SP 13/NACE No.6.

G. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

H. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

I. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Prime surfaces to receive wall coverings.
   2. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
   6. Floors, unless specifically indicated.
   7. Ceramic and other tiles.
   8. Glass.
   9. Acoustical materials, unless specifically indicated.
   10. Concealed pipes, ducts, and conduits.

1.02 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.03 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2023.

C. ASTM D4259 - Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application; 2018.

D. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

F. SSPC-SP 2 - Hand Tool Cleaning; 2018.

G. SSPC-SP 13/NACE No.6 - Surface Preparation of Concrete; 2018.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").

2. MPI product number (e.g., MPI #47).
3. Cross-reference to specified paint system products to be used in project; include description of each system.
4. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit two paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Manufacturer's Instructions: Indicate special surface preparation procedures.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
3. Provide in new, unopened containers, clearly labeled with color name and formula in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.

B. All materials preparation and workmanship to conform to requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute (hereafter referred to as the MPI Painting Manual) as issued by the MPI Accredited Quality Assurance Association having jurisdiction

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

B. Paints:
1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
2. Benjamin Moore & Co.: www.benjaminmoore.com.

3. Cloverdale Paint, Brand Products of Rodda Paint Company: www.cloverdalepaint.com/#sle.
4. Miller Paint Company: www.millerpaint.com.
5. Rodda Paint Co: www.roddapaint.com/#sle.

C. Primer Sealers: Same manufacturer as top coats.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
3. Supply each paint material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: See Section 01 61 16.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: Interior Colors: See Section 09 06 02 - Interior Materials and Finishes Schedule.
1. Extend colors to surface edges; colors may change at any edge as directed by Architect.
2. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PAINT SYSTEMS - INTERIOR

A. Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including hollow metal doors and frames:
1. Two top coats and one coat primer.
2. Primer: Touch up existing shop primer.
3. Top Coat(s): Interior Alkyd; MPI #47, 48, 81, or 96.
a. Products:
1) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane.

B. Wood Floors to be Painted (previously coated):
1. Application: Floors at Press Box.
2. Two top coats without primer.
3. Top Coat(s): Latex Floor Paint.
a. Products:
1) Sherwin-Williams ArmorSeal Tread-Plex Acrylic Floor Coating.
2) Substitutions: See Section 01 60 00 - Product Requirements

C. Concrete Floors, Epoxy:
1. See Section 09 67 00 - Fluid-Applied Flooring.

D. Wood/Plywood, Opaque, 3 Coat:
1. One coat of latex primer sealer:
a. Sherwin-Willilams Premium Wall and Wood Primer, B28W08111.
2. Semi-gloss: Two coats of alkyd enamel.
a. Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane.

E. Concrete/Masonry, Opaque, Epoxy, 2 Coat:

1. Application: Existing CMU and concrete surfaces (excluding floors).
2. Semi-gloss: Two coats; Sherwin-Williams Water Based Catalyzed Epoxy, B73 Series.

F. Ferrous Metals, Unprimed, Alkyd, 3 Coat:
1. One coat of primer: Sherwin-Williams Pro Industrial Pro-Cryl Universal Acrylic Primer.
2. Semi-gloss: Two coats of alkyd enamel; Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane.

G. Ferrous Metals, Primed, Alkyd, 2 Coat:
1. Touch-up with primer recommended by top coat manufacturer for specific substrate.
2. Semi-gloss: Two coats of alkyd enamel; Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane.

2.04 PRIMERS

A. Primers: Provide primers as listed in paint systems above, unless other primer is required or recommended by manufacturer of top coats for specific substrate.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
1. Concrete and Concrete Masonry Units: 12 percent.
2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Concrete:
1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
2. Clean concrete according to ASTM D4258. Allow to dry.
3. Prepare surface as recommended by top coat manufacturer and in accordance with SSPC-SP 13/NACE No.6.

F. Masonry:
1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.

2. Prepare surface as recommended by top coat manufacturer.

G. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

H. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

END OF SECTION

SECTION 09 93 00
STAINING AND TRANSPARENT FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Field application of stains.

B. Field application of transparent finishes.

1.02 REFERENCE STANDARDS

A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and catalog number, and general product category.

C. Samples: Two samples on actual wood substrate to be finished, 4 by 6 inch in size, indicating selected colors and sheens for each system, with specified coats cascaded.

D. Maintenance Data: Submit data including finish schedule showing where each product, color, and finish was used, product technical data sheets, safety data sheets (SDS), care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements for additional provisions.
   2. Extra Stock Materials: Stain and transparent finish materials, 1 gal of each color and type from the same product run; store where directed.
   3. Label each container with color and type in addition to the manufacturer's label.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of stain or transparent finish, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Stain and Transparent Finish Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.05 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by manufacturer of stains and transparent finishes.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide finishes from the same manufacturer to the greatest extent possible.

B. Transparent Finishes:
   1. Old Masters: www.myoldmasters.com.
   2. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 TRANSPARENT FINISHES - GENERAL

A. Finishes:
   1. Provide finishes capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. Supply each finish material in quantity required to complete entire project's work from a single production run.
   4. Do not reduce, thin, or dilute finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

2.03 TRANSPARENT FINISH SYSTEMS

A. Finish on Wood:
   1. Three-coat water-based varnish OR two-coat oil-based varnish.
   2. Top Coat: Exterior clear water based varnish with UV inhibitor; three coats.
      a. Products:
         1) Sherwin-Williams Minwax Water-Based Helmsman Spar Urethane.
         2) Substitutions: Section 01 60 00 - Product Requirements.
   3. Top Coat(s): Exterior Clear Oil-Based Varnish with UV Inhibitor; two coats.
      a. Products:
         1) Old Masters Spar-Marine Varnish.
         2) Sherwin-Williams Minwax Helmsman Spar Urethane.
   4. Top Coat Sheen:
      a. Satin: MPI gloss level 4; use this sheen at all locations.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

3.02 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

D. Reinstall items removed prior to finishing.

END OF SECTION

SECTION 10 11 00
VISUAL DISPLAY UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Porcelain enamel steel markerboards.

1.02 REFERENCE STANDARDS

A. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling; 2018.

B. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2022.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data on porcelain enamel steel markerboard, trim, and accessories.

C. Samples: Color charts for selection of color and texture of porcelain enamel steel markerboard and trim.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide five year warranty for markerboard to include warranty against discoloration due to cleaning, crazing or cracking, and staining.

PART 2 PRODUCTS

2.01 VISUAL DISPLAY UNITS

A. Porcelain Enamel Steel Markerboards (White Boards):
   1. Manufacturers:
      a. ASI Visual Display Products: www.asi-visualdisplayproducts.com/#sle.
      b. Claridge Products and Equipment, Inc; LCS^3 Porcelain Enamel Steel Markerboards: www.claridgeproducts.com/#sle.
      c. Polyvision Corporation; e3 Ceramicsteel Markerboards: www.polyvision.com.
      d. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Color: White.
   3. Core: Fiberboard, manufacturer's standard thickness, laminated to face sheet.
   4. Backing: Galvanized steel sheet, laminated to core.
   5. Size: As indicated on drawings.
   6. Frame: Extruded aluminum , with concealed fasteners.
   7. Frame Finish: Anodized, natural.
   8. Accessories: Provide marker tray, map rail, flag holder, and map supports.

2.02 MATERIALS

A. Porcelain Enameled Steel Sheet: ASTM A424/A424M, Type I, Commercial Steel, with fired-on vitreous finish.

B. Fiber Board: ASTM C208, cellulosic fiber board.

C. Steel Sheet Backing: Manufacturer's standard thickness, galvanized.

2.03 ACCESSORIES

A. Map Rail: Extruded aluminum, manufacturer's standard profile, with cork insert and runners for accessories; 1 inch wide overall, full width of frame.

B. Map Supports: Formed aluminum sliding hooks and roller brackets to fit map rail.

C. Temporary Protective Cover: Sheet polyethylene, 8 mil thick.

D. Flag Holders: Cast aluminum bored to receive 1 inch diameter flag staff, bracketed to fit top rail of board.

E. Marker Tray: Aluminum, manufacturer's standard profile, one piece full length of markerboard, molded ends, concealed fasteners, same finish as frame.

F. Mounting Brackets: Concealed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

C. Verify flat wall surface for frameless adhesive-applied panels.

3.02 PREPARATION

A. Remove switchplates, wall plates, and surface-mounted fixtures where tackable wall paneling is applied. Reinstall items on completion of installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install boards in accordance with manufacturer's instructions.

B. Secure units level and plumb.

C. Butt Joints: Install with tight hairline joints.

D. Carefully cut holes in boards for wall switches and other wall-mounted accessories.

3.04 CLEANING

A. Clean board surfaces in accordance with manufacturer's instructions.

B. Cover with protective cover, taped to frame.

C. Remove temporary protective cover at Date of Substantial Completion.

END OF SECTION

SECTION 10 14 19
DIMENSIONAL LETTER SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Dimensional letter signage.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 DESIGN-BUILD REQUIREMENTS

A. Signage shall be provided by design-build subcontractor (Signage Contractor) as follows:
   1. Signage Contractor shall be responsible for the proper design and installation of signage for the Project.
   2. Signage shall comply with all governing code requirements. Provide all signage required by the governing code.
   3. Signage shall be coordinated with other sections of Work, including rough-in, blocking, and substrate preparation for complete installation.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's product literature for each type of dimensional letter sign, indicating style, font, colors, locations, and overall dimensions of each sign.

C. Shop Drawings:
   1. Include dimensions, locations, elevations, materials, text and graphic layout, and attachment details.

D. Samples: Submit one sample of each type of dimensional letter sign of size similar to that required for project, indicating sign style, font, and method of attachment.

E. Selection Samples: Where materials, colors, and finishes are not specified, submit two sets of selection charts or chips.

F. Verification Samples: Submit samples showing colors and finishes specified.

G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 DIMENSIONAL LETTERS

A. Applications: Building identification.
   1. Use individual metal letters and numbers.
   2. Mounting Location: Exterior as indicated on drawings.

B. Metal Letters:
   1. Material: Aluminum casting.
   2. Thickness: 1/8 inch minimum.
   3. Letter Height: As indicated on drawings.
   4. Text and Typeface:
      a. Character Font: Helvetica, Arial, or other sans serif font.

5. Finish: Brushed, satin.
6. Mounting: Concealed screws.

2.02 ACCESSORIES

A. Concealed Screws: Noncorroding metal; stainless steel, galvanized steel, chrome plated, or other.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install with horizontal edges level.

C. Locate dimensional letter signs and mount at heights indicated on drawings.

D. Protect from damage until mm-dd-yyyy; repair or replace damaged items.

END OF SECTION

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

1.02 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

B. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features, extinguisher ratings and classifications, cabinet dimensions, rough-in measurements for recessed cabinets, cabinet hardware, trim styles, color, and finish.

C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Amerex Corporation: www.amerex-fire.com.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fire Extinguisher Cabinets and Accessories:
   1. Larsen's Manufacturing Co; Architectural Series, Vertical Duo with Larsen-Loc: www.larsensmfg.com.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) for purpose specified and as indicated.
   2. Provide licensed inspector tags on each extinguisher.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Class: A:B:C type.
   2. Size and classification as scheduled.
   3. Finish: Baked polyester powder coat, red color.
   4. Temperature range: Minus 40 degrees F to 120 degrees F 120 degrees F.

C. Wet Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: K type.
   2. Size and classification as scheduled.
   3. Finish: Polished stainless steel.
   4. Temperature range: Minus 20 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS

A. Cabinet Construction: Non-fire rated.

B. Cabinet Configuration: Semi-recessed type.
   1. Formed primed steel sheet; 0.036 inch thick base metal.

2. Exterior nominal dimensions:
   a. Typical Low-Hazard Fire Extinguishers: 9 1/2 inch wide by 24 inch high by 6 inch deep.
   b. Class-K Fire Extinguishers: 12 inch wide by 27 inch high by 8 inch deep.
3. Projected Trim: Returned to wall surface, with 2-1/2 inch projection and rolled edge.

C. Cabinet Configuration: Surface-mounted type; labeled as "FEC-SM" on drawings.
1. Formed stainless steel sheet; 0.036 inch thick base metal.
2. Exterior nominal dimensions:
   a. Typical Low-Hazard Fire Extinguishers: 9-1/2 inch wide by 24 inch high by 6 inch deep.
   b. Class-K Fire Extingushers: 12 inch wide by 27 inch high by 8 inch deep.
3. Trimless type.

D. Door Style: Solid panel with narrow vertical view glazing.

E. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.

F. Cabinet Hardware: Continuous hinge matching cabinet. Provide satin finish pull handle, with Larsen-Loc (requires a sharp pull to open cabinet).

G. Fabrication: Weld, fill, and grind components smooth.

H. Finish of Cabinet Exterior Trim and Door:
1. Typical Low-Hazard Fire Extinguishers: No. 4 - Brushed stainless steel.
2. Class-K Fire Extinguishers: Baked enamel, white color.

I. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

A. Extinguisher Brackets: Formed steel, chrome-plated.

B. Cabinet Signage: Red die-cut lettering applied vertically on solid panel of door. Text to read: "FIRE EXTINGUISHER".

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install cabinets plumb and level, 48 inches from finished floor to fire extinguisher handle for forward reach.

C. Secure rigidly in place.

D. Place extinguishers in cabinets, or install on brackets as scheduled.

3.03 SCHEDULES

A. For areas designated "FEC" on Drawings: Provide Dry Chemical Type 3A:40B:C, 5 lb capacity. Place in Semi-Recessed Cabinet except where Drawings specifically note a surface-mounted installation.

B. For areas designated "FEC-K" on Drawings: Provide Wet Chemical Type 2A:K, 6 liter capacity, placed in Semi-Recessed Cabinet except where Drawings specifically note a surface-mounted installation.

END OF SECTION

SECTION 10 51 13
METAL LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Installation of salvaged metal lockers.

B. Locker benches.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's published data on bench construction, sizes, and accessories.

C. Shop Drawings: Indicate plan layout.

D. Manufacturer's Installation Instructions: Indicate component installation assembly.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Protect locker finish and adjacent surfaces from damage.

PART 2 PRODUCTS

2.01 LOCKER BENCHES

A. Locker Benches: Free standing type; bench top of aluminum; painted steel pedestals.
   1. Height: 17-19 inch; match existing.
   2. Length: As indicated on drawings.
   3. Width: Match existing.
   4. End Caps: Provide aluminum caps at each end of benches.
   5. Pedestals: Extra heavy duty galvanized steel with cast iron base and heavy duty concrete anchors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared wood bases are in correct position and configuration.

3.02 INSTALLATION

A. Install benches in accordance with manufacturer's instructions.

B. Re-install salvaged lockers. Place and secure on prepared wood base.

C. Install lockers plumb and square.

D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 pounds.

E. Bolt adjoining locker units together to provide rigid installation.

F. Install end panels, filler panels, and sloped tops.

G. Install fittings if not factory installed.

H. Replace components that do not operate smoothly.

3.03 CLEANING

A. Clean locker interiors and exterior surfaces.

END OF SECTION

SECTION 10 81 00
BIRD CONTROL NETTING SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bird netting.

B. Bird netting hardware.

1.02 REFERENCE STANDARDS

A. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

B. ASTM D3451 - Standard Guide for Testing Coating Powders and Powder Coatings; 2006 (Reapproved 2017).

C. ASTM F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs; 2022.

D. ISO 9001 - Quality Management Systems — Requirements; 2015, with Amendment (2024).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's data sheets on each product used, including preparation instructions, storage and handling requirements, and installation guidelines.

C. Shop Drawings: Submit detailed shop drawings, including plans, materials, hardware, anchorages, fastening details, and manufacturer's technical and descriptive data.

D. Estimate Worksheet: Completed manufacturer's worksheet detailing the scope of the netting enclosure, and the mounting hardware type, location, and spacing.

E. Samples: Submit one sample of bird netting in specified color, minimum 4 inches by 4 inches.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified.

B. Installer to obtain, review, and understand all of the manufacturer's guidelines, estimating worksheets, and installation instructions for specified bird netting system.

C. Installer must be completely familiar with the proper installation procedures for the specified bird netting and mounting system.

D. Installer must field verify and record accurate and complete dimensions that define the areas specified for enclosure by the bird netting system.

E. Installer to ensure that bird netting meets or exceeds ISO 9001 2000 Quality Management Standards.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in manufacturer's original, unopened packaging, with labels clearly identifying manufacturer and material.

B. Provide storage to protect bird netting system boxes from moisture, humidity, and extreme temperature fluctuations until ready for installation. Do not stack or place other packaging or objects on bird netting shipping boxes.

C. Keep bird netting system in original packaging until needed for installation.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide manufacturer's 15-year warranty for bird netting materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nixalite of America, Inc.; www.nixalite.com.

B. ABC Advanced Bird Control, a Division of Nixalite of America, Inc.: www.abcbirdcontrol.com.

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 BIRD CONTROL NETTING

A. Basis of Design: K-Net HT Bird Exclusion Netting by Nixalite of America, Inc.

B. Material: High density polyethylene (HDPE); abrasion, UV, flame and rot resistant; water-proof.

C. Color: Black.

D. Construction: Knotted square mesh netting comprised of 12 ply (4 x 3) strands with 75 pounds (33.9 kg) knotted breaking strength; seamless and borderless for clean edges and easier perimeter fastening.

E. Mesh Size: 3/4 inch (1.9 cm) square mesh.

F. Standards: Comply with ISO 9001 2000 Quality Management Standards.

G. Netting Sizes:
   1. Widths: 25 feet and 50 feet.
   2. Lengths: 25 feet, 50 feet, and 100 feet.

H. Thermal & Physical Properties:
   1. Softening Point: 250 degrees F.
   2. Melting Point: 293 degrees F.
   3. Flash Point: 660 degrees F.
   4. Chemically inert.
   5. Resistant to acids and alkalis at room temperature.

2.03 BIRD NETTING HARDWARE

A. Installer to contact manufacturer for up-to-date information and recommendations for bird netting hardware applications, item combinations, as well as new items and procedures.

B. Tensioned Perimeter and Support Cable System: Connection, corner, cable guide, and finishing hardware.

C. Net Cable and Connection Hardware:
   1. Net Cable: Aircraft grade, stainless steel, 7 x 7 (49 strand), 3/32-inch diameter cable with 900 lb. breaking strength.
   2. Turnbuckles: Stainless steel, hook and eye turnbuckles; size determined by maximum continuous cable length of any one cable run.
      a. Small Turnbuckle: Max. continuous cable length is 25 feet.
      b. Medium Turnbuckle: Max. continuous cable length is 50 feet.
      c. Large Turnbuckle: Max. continuous cable length is 75 feet.
   3. Net Ferrules: Zinc plated copper core crush ferrules for 3/32-inch diameter cable.
   4. Wire Robe Clamps: Galvanized or stainless steel wire rope clamps for 3/32-inch diameter cable. Mandatory for all loop connections on cable runs of 25 feet or more.
   5. Cable Thimble: Forged stainless steel cable thimble for 3/32-inch diameter cable.

D. Corner Hardware (Anchoring):
   1. Eyebolts: Extreme duty stainless steel eyebolt, 2-inches long, 9/16 inch I.D. with 1/4-20 NC threads and stainless steel hex nut.
   2. Screw Eyes: Extreme duty stainless steel screw eyes 2-inches long, 17/32-inch ID.
   3. Machine Screw Anchor: Zinc plated anchor; 1/2-inch diameter x 1-inch deep with 1/4-20 threads inside.

E. Cable Guide Hardware:
   1. Small Screw Eyes: Heavy duty, stainless steel, 1-3/16 inch long x 7/32 inch I.D.
   2. Small Eyebolts: Heavy duty, stainless steel, 1-3/8 inch long x 9/32 inch I.D. with stainless steel hex nut.
   3. Sidewinders: For heavy gauge sheet metal, structural steel up to 1/2 inch think, and masonry surfaces.
   4. E-Z Clip: Stainless steel bracket with mounting holes for 1/8-inch shank screws or nails.
   5. Hammer-On Flange Clips: Stainless steel.
   6. Stainless Steel Angle Bracket: 90 degree stainless steel angle bracket with two holes, one for mounting the other for the cable.
   7. HD Stainless Steel Cable Clamp: Heavy duty saw-tooth edge clamp that fits up to 3/4-inch thick steel.
   8. Stainless Steel J-Clamp: J-shaped strap of stainless steel with mounting and cable guide holes. Fasten with stainless steel screws or nails.
   9. Stainless Steel Lag Screw w/ Eyelet: Fastens to wood, composite, and wood core products.

F. Finishing Hardware:
   1. Net Rings: Three styles of stainless steel net rings used to attach the netting mesh to the cables, to close openings in the netting mesh, and to fasten the Net Zippers to the netting.
   2. Net Zipper: 3/4-inch heavy fabric tape, open top and auto lock slider; 2 foot, 4 foot, 6 foot, and 8 foot lengths.
      a. Allows access to areas behind the bird netting installation.

2.04 ACCESSORIES

A. Fasteners: Comply with ASTM F593 for stainless steel or ASTM A307 for carbon steel, sizes to suit installation conditions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces that will receive the netting hardware and all areas that will end up behind or inside the netting installation. Note damaged surfaces or incomplete construction that could compromise the bird netting installation.

B. Note all areas, surfaces, or objects that may require maintenance or periodic replacement after the bird netting is installed (light fixtures, electrical equipment, etc.). Use the appropriate netting accessories to allow access behind the installed netting system.

C. Note any objects or conditions that could damage the installed bird netting. Install the netting in such a manner as to avoid these conditions.

3.02 PREPARATION

A. Field Measurements: Verify dimensions for each area specified for enclosure with the bird netting. Use manufacturer's planning guides and estimate worksheets to verify that sufficient quantities of bird netting and net hardware will be installed at each location specified for bird netting.

B. Make sure all installation surface finishing requirements have been accomplished before installing the bird betting. Bird netting is to be the last item installed on each specified surface. Do not apply any surface coating or treatment over or on the installed bird netting or mounting hardware.

3.03 INSTALLATION

A. Install bird netting hardware as recommended by manufacturer. General order of installation:
   1. Install all corner hardware, cable guides and connection hardware.
   2. Run the net cable through the net hardware.

3. Leave the turnbuckles loose.

B. Install netting as recommended by the manufacturer. If necessary, cut the net to fit the area. If multiple pieces are needed, join the pieces together with the recommended net ring hardware. Use the net rings to fasten the netting mesh to the perimeter and support cables. Tighten the turnbuckles to eliminate any wrinkles in the netting.

C. Install netting to avoid contact with machinery, vehicles, extreme heat, tree branches, etc. Make necessary adjustments to keep netting a sufficient distance from these objects or conditions.

D. Finished netting installation to be taught, free of wrinkles, gaps and openings.

E. Finished netting installation shall completely enclose the truss cavities and catwalk decking, including truss ends, and shall exclude birds from the entire area above the audience seating.

3.04 ADJUSTMENTS AND CLEANING

A. Inspect finished installation. Make any adjustments needed to conform to manufacturer's bird netting installation guidelines.

B. Bird netting must block off or seal up all routes and paths that pest birds follow to their preferred roosts. Note any holes, gaps, or openings in the bird net installation that birds can use to bypass or get around the netting barrier. Correct any unsatisfactory conditions.

C. Remove net or cable hardware debris and waste from project site.

END OF SECTION

SECTION 10 83 00
FLAGS AND BANNERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flags and banners

B. Mounting brackets.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's product literature for each type of banner and bracket, indicating style, font, colors, locations, and overall dimensions of each sign.

C. Shop Drawings:
   1. Include dimensions, locations, elevations, materials, text and graphic layout, and attachment details.
   2. Provide calculations for anchorage of each flag/banner with each bracket type as required.

D. Samples: Submit one sample of each type of banner and banner bracket of size similar to that required for project, indicating fabric, graphics, finishes, and method of attachment.

E. Selection Samples: Where materials, colors, and finishes are not specified, submit two sets of selection charts or physical samples.

F. Manufacturer's Installation Instructions: Include installation templates and attachment devices where applicable.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Banner Brackets:
   1. KBW BannerFlex by Consort: www.bannerflex.com.
   2. Metal Craft Industries: www.metalcraftindustries.net.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 BANNER BRACKETS

A. Banners:
   1. Material: 18 oz vinyl.
   2. Graphics: Custom graphics, printed on both sides.
   3. Pole Pockets: 3; top, bottom and center.
   4. Size and Configuration: As indicated on drawings.

B. Banner Brackets: Aluminum brackets designed for installation of large format banners of sizes indicated.
   1. Finish: Bright aluminum or black powder coat.
   2. Mounting: Wall mount, exposed fasteners.
   3. Products: Basis of Design: KBW BannerFlex by Consort; D3 Banner Bracket with RoundPro Arm: www.bannerflex.com.

2.03 ACCESSORIES

A. Wall Mount Plate: Steel plate for spreading wind load over a larger surface.
   1. Size: 9-1/2" by 9-1/2".
   2. Product: Bannerflex D3 Wall Mount Plate.

B. Fasteners: As indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

A. Install banner brackets in accordance with shop drawings and manufacturer's instructions.

B. Install banners in accordance with manufacturer's instructions.

C. Install with horizontal edges level.

D. Protect from damage until Substantial Completion; repair or replace damaged items.

END OF SECTION

SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for existing casework.

B. Wall-hung counters.

1.02 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

E. PS 1 - Structural Plywood; 2023.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Comply with requirements of AWS or NAAWS, Section 1 - Submittals.

C. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

D. Shop Drawings: Submit shop drawings in compliance with the requirements of AWS or NAAWS, Section 1 - Submittals.
   1. Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections

E. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

F. Sustainable Design Submittal: Documentation for sustainably harvested wood-based components.

G. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

H. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by AWS or NAAWS. Do not install products under environmental conditions outside the limits of these industry standards.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.
   1. Laminate Sheet: NEMA LD 3, Grade HGS, 0.048 inch nominal thickness.
      a. Manufacturers:
         1) Formica Corporation: www.formica.com/#sle.
         2) Panolam Industries International, Inc; Nevamar Standard HPL: www.panolam.com/#sle.
         3) Wilsonart: www.wilsonart.com/#sle.
         4) Substitutions: See Section 01 60 00 - Product Requirements.
      b. NSF approved for food contact.
      c. Finish: Matte or suede, gloss rating of 5 to 20.
      d. Surface Color and Pattern: As selected by Architect from the manufacturer's full line.
   2. Exposed Edge Treatment: Square, substrate minimum 1-1/4 inch thick; covered with matching laminate.
   3. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Custom Grade.

C. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
      a. Manufacturers:
         1) Avonite Surfaces: www.avonitesurfaces.com/#sle.
         2) Dupont: www.corian.com/#sle.
         3) Formica Corporation: www.formica.com/#sle.
         4) LG Hausys America, Inc; HI-MACS 12mm: www.lghausysusa.com/#sle.
         5) Wilsonart: www.wilsonart.com/#sle.
         6) Substitutions: See Section 01 60 00 - Product Requirements.
      b. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
      c. Color and Pattern: As indicated in Section 09 06 02 - Materials and Finishes Schedule.
   3. Other Components Thickness: 1/2 inch, minimum.
   4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; square edge.
   5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
   6. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Premium Grade.

2.02 MATERIALS

A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

B. Particleboard or Medium Density Fiberboard for Plastic Laminate Countertops: MR-10 moisture resistant particle board or MDF, laid up with a rigid glue line of PVA Type II adhesive.

C. Adhesives: Chemical resistant waterproof Type II adhesive as recommended by manufacturer of materials being joined.

D. Joint Sealant: Mildew-resistant silicone sealant, clear.

2.03 ACCESSORIES

A. Countertop Support Brackets:
   1. Material: Steel.
   2. Size: 2-1/2 inches wide by 14 inches deep by 7 inches high, or as recommended for depth of countertop.
   3. Color: Black.
   4. Fasteners: Provide screws or anchors for installation into CMU.
   5. Basis of Design Product: Iron Supports; HD Front Mount Countertop L Bracket: www.ironsupports.com.

2.04 FABRICATION

A. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops.

B. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

D. Wall-Mounted Counters: Provide skirts, aprons, brackets, and braces as indicated on drawings, finished to match.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by AWS or NAAWS for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install countertops in compliance with requirements of AWS or NAAWS.

B. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

C. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.

D. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Follow allowable tolerances in AWS or NAAWS.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 22 00 00
BASIC PLUMBING REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. This Section specifies the basic requirements for all Contractor installed equipment. It applies to all sections included in Division 22. The requirements herein are an expansion upon the requirements of Division 1.

B. Provide all materials, labor and equipment required to install complete and fully operational plumbing systems as indicated by the contract drawings and this specification.

C. Obtain and pay for all permits, licenses, fees and taxes applicable to this project as required by law.

D. Cooperate with other trades in furnishing material and information required for installation and operation of mechanical items.

E. Requirements for the following are included:
   1. Related work (other Contract Documents and specification sections) that must be combined with the requirements of this Section.
   2. Design performance.
   3. Delivery, storage, and handling.
   4. Quality assurance and standards.
   5. Submittals.
   6. Product quality, basic type, and finishes.
   7. Equipment identification.
   8. Excavation and backfill.
   9. Installation.
   10. Mounting and shimming.
   11. Inspection.
   12. Safety considerations.
   13. Cleaning, startup, and adjustments.

1.02 RELATED WORK

A. This general section shall be used in conjunction with the following other specifications and related Contract Documents to establish the total requirements for the project equipment and systems:
   1. Division 1 sections included in this Project specifications.
   2. The Contract.
   3. General and specific mechanical specifications and drawings included in the project.

1.03 DEFINITIONS

A. “Indicated”: Refers to graphic representations, notes or schedules in the Drawings; or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents.
   1. Terms such as “shown”, “noted”, “scheduled”, and “specified”, are used to notify or help the user to locate reference. Location is not limited.

B. “Directed”: Terms such as “directed”, Requested”, “authorized”, “selected”, “approved”, “required”, and “permitted” mean directed by Architect/Engineer, approved by Architect/Engineer and similar phrases.

C. “Approved”: When used in conjunction with Architect/Engineer's action on contract submittals, applications, requests, is limited to Architect/Engineer's duties and responsibilities as stated in the Conditions of the Contract.

D. “Regulations”: Includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction

industry that control performance of Work.

E. “Furnish”: Means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation and similar operations.

F. “Install”: Describes operations at Project site including actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, supporting, isolating, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.

G. “Provide”: Means to furnish and install.

H. “Installer”: A contractor, or another entity engaged by the contractor, either as an employee, subcontractor, or contractor of a lower tier, to perform a particular construction activity including installation, erection, application or similar operations.
   1. Installers are required to be experienced in operations they are engaged to perform.
   2. The term “experience” means having successfully completed a minimum of three previous projects similar in scope and size to this Project and within the time frame indicated in the “Quality Assurance” section of the Specifications. In addition, in means being familiar with special requirements indicated and having complied with requirements of authorities having jurisdiction.

I. “Project Site”: Is defined as the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of Project.

1.04 DESIGN PERFORMANCE

A. Compliance by the Contractor and/or Vendor with the provisions of this Specification does not relieve him of the responsibilities of furnishing equipment and materials of proper design, mechanically suited to meet operating guarantees at the specified service conditions.

1.05 SUBMITTALS

A. Product Data: Submit complete sets of manufacturer's product data in .PDF format for approval. All submittals are to be received in no more than (3) three packages. See Division 1 for further information regarding submittal requirements. Literature submitted shall clearly indicate the model number, capacity, rated operating conditions, noise levels, size, weight, support requirements, rough-in data and dimensions, electrical power requirements, wiring diagrams, utility (fuel, air, cooling water, etc.) requirements, and options furnished. Submittals shall include, but are not necessarily limited to the following;
   1. Plumbing: Piping and insulation; Plumbing fixtures, including trim; insulation; valves; hangers and supports; equipment bases; isolators; water heaters; booster pumps and the like.

B. Operation and Maintenance Data: Submit three complete sets of manufacturer's literature in .PDF format for approval. Data shall include installation, start-up, and maintenance instructions, parts lists, and wiring diagrams. Include all material on a CD-ROM or USB device.

C. Substitutions: System design was based upon the equipment and materials listed on the drawings and specifications herein. At contractor's option, another manufacturer's equipment of similar quality, capacity and features may be submitted for prior approval per Section 01 25 00. Prior permission to substitute does not relieve the contractor of the responsibility of including this information in the bound submittal packages.

1.06 QUALITY ASSURANCE

A. Codes and Standards: Comply with the provisions of the following codes, standards and specifications, except where more stringent requirements are shown or specified:
   1. State of Washington "IBC".
   2. State of Washington "IMC".
   3. State of Washington "UPC".
   4. State of Washington "IFC".
   5. ANSI/ASHRAE 90 - “Energy Efficient Design of New Buildings….”

6. ANSI B31.9 "Building Service Piping".
7. NFPA 54 and NFPA 90B.

B. Drawings: All drawings are diagrammatic and show general design, arrangement, and extent of the systems. Do not scale drawings for rough-in dimensions, nor use as shop drawings.

C. Installer Qualifications: Company specializing in performing the work required with a minimum of five years documented experience.

D. Contractor shall furnish and install all work in accordance with manufacturers' recommendations and instructions.

1.07 DELIVERY, STORAGE AND PROTECTION

A. Delivery: Deliver to site with manufacturer's labels intact and legible.

B. Preparation for shipment:
1. Each unit shall be suitably prepared for the shipment specified and for storage in accordance with manufacturer's instructions in a manner requiring no disassembly prior to operation.
2. The Contractor shall be solely responsible for the adequacy of the Preparation for Shipment provisions employed with respect to materials and application.
3. One complete set of Installations, Operating and Maintenance Instructions shall be packed and shipped with the equipment. This set is in addition to the sets that are to be sent directly to the Owner.

C. Handling: Avoid damage. Comply with manufacturer's installation instruction requirements for rigging, unloading and transporting units.

D. Storage: Inside protected from weather, dirt and construction dust. Where necessary to store outside, elevate well above grade and enclose with durable, waterproof wrapping. Cap all pipe ends. Taping pipe ends is not adequate or allowable.

1.08 PROJECT CONDITIONS

A. General: Provide products which are compatible with other portions of the work and provide products with the proper power characteristics and similar adaptations for the project.

B. Arrangement: Arrange piping parallel with primary lines of the building construction and with a minimum 7 feet overhead clearance in unfinished equipment rooms where possible. Conceal all piping where possible unless indicated otherwise. Locate operating and control equipment properly to provide easy access for operation and maintenance. Give right-of-way to piping which must be sloped for drainage. Set all equipment level or as recommended by manufacturer.

C. Coordination: Where several elements of the work must be sequenced and positioned in order to fit the available space, prepare shop drawings showing the actual physical dimensions (at accurate scale) required for installation and submit prior to purchase/fabrication/installation of any of the elements involved in the coordination.

1.09 STANDARDS

A. General: Provide all new materials and equipment, identical to apparatus or equipment in successful operation for a minimum of five years. Provide materials of comparable quality omitted here but necessary to complete the work. Maximum allowable variation from stated capacities, minus 5% to plus 10% as approved in each case.

B. Governing Standards: The following are typical standards generally referenced in these specifications and identified by their acronym. Federal Specifications (FS), American Society for Testing Materials (ASTM), American National Standards Institute (ANSI), Manufacturer's Standardization Society of the Valve and Fitting Industry, Standard Practice (MSS SP-69), Cast Iron Soil Pipe Institute (CISPI), Underwriters Laboratory (UL) numbers are given.

1.10 WARRANTIES

A. Contractor shall provide a 1 year warranty on all equipment, materials and workmanship for a period of one year from the date of owner's acceptance.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 LAYOUT AND COORDINATION

A. Site Examination: Before starting work, carefully examine site and all Contract Drawings. Become thoroughly familiar with conditions governing work on this project. Verify all indicated elevations, building measurements, rough-in dimensions and equipment locations before proceeding with any work.

B. Utility Locations: The location of all utilities, wires, conduits, pipes, ducts, or other service facilities are shown in a general way only on the drawings and in some instances are taken from existing drawings. Ascertain whether any additional facilities other than those shown on the plans may be present and determine the exact location and elevations of all utilities prior to commencing installation.

C. Discrepancies: Any error, omission, conflict or discrepancy in Drawings, Specifications and/or existing conditions shall be reported immediately. Do not proceed with any questionable items of work until clarification of same has been made. Should rearrangement or re-routing of piping or ductwork be necessary, provide for approval the simplest layout possible for that particular portion of the work. Under no circumstances shall beams, girders, footings or columns be cut for mechanical items. Casting of pipes into concrete is prohibited unless so shown on Drawings.

D. The Contractor shall cooperate with others to avoid interferences and delays in the construction work.

E. Interference as a result of poor coordination or lack of cooperation with other trades shall be corrected at the Contractor's expense.

3.02 CONTINUITY OF EXISTING SERVICES

A. Existing water, power, heat, ventilation, air conditioning and other services shall remain in service during new construction work. Coordinate any interruption in service during new construction work. Coordinate any interruption of these services with the Owner's representative a minimum of twenty-four (24) hours in advance.

B. Protect from damage active utilities existing and evident by reasonable inspection of the site whether shown or not on the Drawings. Protect, relocate or abandon utilities encountered in the work which were not shown on the Drawings or evident by inspection of the work as directed by the Architect. Maintain continuity of all utility services to existing buildings.

3.03 CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with Division 1.

B. Protection: During cutting and patching, protect adjacent installations. Provide temporary barriers to prevent the spread of dust and dirt outside of the immediate work area.

C. Repair: Patch finished surfaces and building components using new materials to match the existing.

D. Inspection: Upon written direction from the Architect, uncover and restore work to provide for observation of concealed work.

3.04 EXCAVATION AND BACKFILL

A. General: Perform all necessary excavation and backfill required for the installation of mechanical work. Any piping or other work damaged by the Contractor's operations shall be repaired at the Contractor's expense.

B. Water: Keep all excavations free of standing water. Excavations damaged or softened by water or frost shall be re-excavated and filled back to original level with approved material at the Contractor's expense.

C. Test: During the progress of the work for compacted fill, the Owner reserves the right to request compaction tests made under the direction of a testing laboratory.

D. Trench Excavation: Excavate trenches to the necessary depth and width, removing rocks, unstable soil (silt, peat, etc.) roots and stumps. Width of trench shall be adequate for proper installation of piping or conduit.

E. Foundation and Bedding:
   1. Proper preparation of foundation, placement of foundation material where required, and placement of bedding material shall precede the installation of the pipe. This shall include leveling of the trench bottom as well as placement and compaction of required bedding material to a uniform grade so that piping rests upon a continuous and uniform bedding.
   2. Where excavation has been made below the required grade, the Contractor shall provide, place and compact suitable bedding material to restore the proper grade elevation.

F. Provide tracer wire over top of piping.
   1. Construction:
      a. Conductor: Solid or stranded copper per spec ASTM B3.
      b. Insulation: High Molecular Weight Polyethylene (HMWPE) ASTM D-1248. Various insulation colors dependant on usage.
      c. Temperature: 70 degrees C dry and wet.
      d. Voltage: 20 and 30 Mil = 30 to 300 volts. 45 Mil = 600 volts.

G. Backfilling: Upon acceptance of installed piping systems, trenches shall be backfilled in lifts. Backfill material shall be placed and compacted in lifts not to exceed 6 inches in depth to a height of 1 inch above the top of trench. Backfill shall be placed to obtain contact with the entire periphery of the pipe without disturbing pipe placement.

H. Compaction: One of the following methods or combination thereof shall be required; 1) Mechanical Tamper or Vibratory Compactor. Compaction shall be sufficient to attain 95% of maximum density at optimum moisture content. Water "puddling" or "washing" is prohibited.

I. Bedding/Backfill Material: Where native material has been removed, necessary foundation material consisting of 3/4 inch minus crushed rock or fill sand shall be placed and compacted to form a firm base of the required thickness. Backfill material shall be the same. Follow the pipe manufacturer's installation instructions when specified materials are specifically prohibited.

3.05 EQUIPMENT REMOVAL

A. All removed equipment is the property of the Contractor unless indicated otherwise. Disconnect and remove all such equipment from the property. Cap all piping in walls, below floors, and/or above ceilings in finished rooms.

B. Where equipment is to be reused, reconnect piping, wiring and/or controls to allow this equipment to function as it had prior to this renovation unless indicated otherwise.

3.06 MECHANICAL EQUIPMENT WIRING

A. Provide all motor starters, control devices, and wiring complete from power source indicated on Drawings.

B. Equipment and systems shown on the Drawings and/or specifications, are based upon requirements of specific manufacturers which are intended as somewhat typical of several makes which may be approved. Provide all field wiring and/or devices necessary for a complete and operable system controls for the actual selected equipment/system.

3.07 INSTALLATION

A. Locating and Positioning Equipment: Observe all Codes and Regulations and good common practice in locating and installing mechanical equipment and material so that completed installation presents the least possible hazard. Maintain recommended clearances for repair and service to all equipment.

B. Anchorage: Anchor and/or brace all mechanical equipment, piping to resist displacement due to seismic action, include snubbers on equipment mounted on spring isolators.

C. Where mounting heights or locations are not identified, install systems, equipment and materials to provide maximum headroom.

D. Provide clearance for installation of insulation and access to valves, fittings, damper actuators, etc. on pipe and duct systems.

E. Install systems, materials and equipment giving right of way to systems required to be installed at a specific slope or operation by gravity.

F. Provide condensate drain piping to over nearest floor drain for all coils, furnaces, boilers, domestic water heaters and the likes.

G. Flush clean and disinfect domestic water system.

H. Provide chrome plated rigid or flexible supplies to fixtures with stops, reducers, and escutcheons.

I. Provide trap primers and piping for floor drains and floor sinks.

J. Installation shall be in accordance with the requirements of the equipment manufacturer, including special requirements for seismic restraints.

K. Equipment Manufacturer's Responsibility and Services:
   1. A manufacturer's representative for major equipment and operating systems shall be provided as necessary to assist the Contractor during installation, and to provide written certification that the equipment has been installed as specified and in accordance with the manufacturer's representative.
   2. The manufacturer's representative shall provide the initial startup of equipment in the presence of the Owner.
      a. Provide a pre-start check of all piping, valves, control devices, control panels, and equipment.
      b. Calibrate and adjust equipment and controls for operation at the specified design and conditions.
      c. Provide a record of all startup events noting problems and their resolution.
      d. Provide a record of all set points for operational controls and devices.
   3. Upon the completion of the equipment startup, provide instructional time with the Owner's personnel to review the operations and maintenance manuals and perform each step necessary for startup, shutdown, troubleshooting, and routine maintenance. The instructional time shall be scheduled through the Owner.
   4. Upon completion of the inspections, startup, testing, and checkout procedures, the equipment manufacturer shall submit written notice to the Owner that the units are ready for use by the Owner. Provide a certificate of calibration for all equipment.

3.08 MOUNTING AND SHIMMING

A. Mount equipment as shown on the Drawings. Provisions for mounting special equipment on spring isolators, snubbers, and inertia bases are specified in Section 22 05 48, Vibration Isolation and Sound and Seismic Controls for Plumbing Piping and Equipment.

B. Level the equipment by means of 304 stainless steel wedges (stainless steel plates and stainless steel shims). Wedge taper shall not be greater than 1/4 inch per foot. Use double wedges to provide a level bearing surface for the equipment. Secure each pair of wedges in their final positions with one tack weld on each side after leveling is complete. Wedging shall

be executed in a manner that will prevent a change in level or springing of the Baseplate when the anchor bolts are tightened.

1. Adjust rotating equipment assemblies such that the driving units are properly aligned, plumb and level with the driven units and all interconnecting shafts and couplings.
2. All rotating equipment shall be checked for proper alignment with dial indicators or laser after completion of grouting. The alignment must be within the tolerances required by the equipment manufacturer. The final alignment check shall be witnessed by the Owner.

3.09 INSPECTION

A. The Contractor shall inspect his work to ensure the installation and workmanship is in accordance with these specifications and acceptable industry standards for the work being done.

B. All materials, equipment, and workmanship shall be subject to inspection at any time by the Owner. Contractor shall correct any work, materials, or equipment not in accordance with the Contract Documents.

3.10 SAFETY CONSIDERATIONS

A. All equipment shall be installed with suitable access clearances that satisfy OSHA and code requirements for maintenance or removal of replaceable parts and components, and with necessary inions or flanges to perform the maintenance or removal without removing the connecting appurtenances.

B. Where equipment requiring periodic maintenance cannot be reached by normal walkways because of interference with ductwork, piping, or other obstructions the Contractor shall notify the Owner and propose an alternate safe means of access. These may include construction of an overhead platform with stairway or ladder ends and safety railings or handholds, or walk-through duct plenums with hinged access doors, or as required to meet OSHA standards for safe maintenance procedures.

3.11 CLEANING, START-UP, AND ADJUSTING

A. The Contractors shall be responsible for proper operation of all systems, minor subsystems, and services provided under this section. He shall coordinate start-up procedures, calibration, and system checkout with all project managers. Any system operational problems shall be diagnosed; all correctional procedures shall be initiated as required to bring out the system into compliance with the design, and the problem then shall be rechecked to verify that the system operates normally.

B. Thoroughly clean all parts of the installation at the completion of the work. The Contractor shall clean up and remove from the premises all refuse material, crates, and rubbish arising from his work. Remove, clean, and reinstall all filters. Belt-drive tensions and alignments shall be checked. All motors and bearings shall be lubricated in accordance with the manufacturer's service manuals prior to equipment start-up. Provide a lubrication schedule for every item of equipment furnished under this section. The schedule shall include the type of lubricant and the application frequency.

END OF SECTION

SECTION 22 05 29
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe hangers.

B. Hanger rods.

C. Pipe supports, guides, sleeves, sleeve seals, shields, and saddles.

D. Firestopping and firestopping accessories.

E. Anchors and fasteners.

1.02 RELATED REQUIREMENTS

A. Section 22 07 19 - Plumbing Piping Insulation.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping; 2023.

D. ASME B31.9 - Building Services Piping; 2020.

E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

F. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2022).

G. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

H. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures; 1999 (Reapproved 2022).

I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

J. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

K. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

L. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2022.

M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

N. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

O. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).

P. FM (AG) - FM Approval Guide; Current Edition.

Q. MFMA-4 - Metal Framing Standards Publication; 2004.

R. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

S. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

T. UL (DIR) - Online Certifications Directory; Current Edition.

U. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

V. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
2. Coordinate the work with other trades to provide additional framing and materials required for installation.
3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 30 00.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, thermal insulated pipe supports, sleeves, sleeve seals, and firestopping.

C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.
1. Application of protective inserts, saddles, and shields at pipe hangers for each type of insulation and hanger.

D. Evaluation Reports: For products specified as requiring evaluation and recognition by ICC Evaluation Service, LLC (ICC-ES), provide current ICC-ES evaluation reports upon request.

E. Installer's Qualifications: Include evidence of compliance with specified requirements.

F. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Comply with applicable building code.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Installer Qualifications for Powder-Actuated Fasteners (when specified): Certified by fastener system manufacturer with current operator's license.

D. Installer Qualifications for Field-Welding: As specified in Section 05 50 00.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide required hardware to hang or support piping, equipment, or fixtures with related accessories as necessary to complete installation of plumbing work.

B. Provide hardware products listed, classified, and labeled as suitable for intended purpose.

C. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 3. Include consideration for vibration, equipment operation, and shock loads where applicable.

D. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.

E. Fire Resistance: Provide hardware rated for 60 minutes resistance unless specifically indicated by the authority having jurisdiction.

F. Vibration Isolation and Seismic Restraint Requirements: See Section 22 05 48.

G. Materials for Metal Fabricated Supports: Comply with Section 05 50 00.
   1. Zinc-Plated Steel: Electroplated in accordance with ASTM B633 unless stated otherwise.
   2. Galvanized Steel: Hot-dip galvanized in accordance with ASTM A123/A123M or ASTM A153/A153M unless stated otherwise.

H. Corrosion Resistance: Use corrosion-resistant metal-based materials fully compatible with exposed piping materials and suitable for the environment where installed.
   1. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
   2. Outdoor, Damp, or Wet-Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.

2.02 MANUFACTURERS

A. Anvil International, LLC: www.asc-es.com/#sle.

B. Unistrut, a brand of Atkore International, Inc: www.unistrut.com/#sle.

C. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.

D. FNW: www.fnw.com/#sle.

E. nVent Caddy, a brand of nVent: www.erico.com/#sle.

F. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.

G. PHP Systems/Design: www.phpsd.com/#sle.

H. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.03 PIPE HANGERS

A. Band Hangers, Adjustable:
   1. MSS SP-58 type 7 or 9, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.

B. J-Hangers, Adjustable:
   1. MSS SP-58 type 5, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel..
   2. Felt-Lined: Provide for uninsulated pipe to reduce noise and prevent static issues.

C. Swivel Ring Hangers, Adjustable:
   1. MSS SP-58 type 10, epoxy-painted, zinc-colored.

2. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
3. FM (AG) and UL (DIR) listed for specific pipe size runs and loads.
4. Felt-Lined: Provide for uninsulated pipe to reduce noise and prevent static issues.

D. Clevis Hangers, Adjustable:
1. Copper Tube: MSS SP-58 type 1, epoxy-plated copper.
2. Felt-Lined: MSS SP-58 type 1, zinc-plated, silicone-free carbon steel.
3. Light-Duty: MSS SP-58 type 1, zinc-colored, epoxy plated.
4. Standard-Duty: MSS SP-58 type 1, zinc-colored, epoxy plated.
5. UL (DIR) listed: Pipe sizes 4 to 8 inch.
6. FM (AG) listed: Pipe sizes 4 to 8 inch.

2.04 PIPE CLAMPS

A. Riser Clamps:
1. For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.
2. MSS SP-58 type 1 or 8, carbon steel with epoxy plated or zinc plated finish.
3. Medium Split Horizontal Pipe Clamp: MSS SP-58 type 4, carbon steel with epoxy plated finish.
4. Copper Tube Pipe Clamp: MSS SP-58 type 8, epoxy plated copper.
5. UL (DIR) listed: Pipe sizes 1/2 to 8 inch.
6. Isolate riser clamp from structure by use by use of Hubbard Enterprisers/Holdrite #274 or #278 riser pad or approved.

B. Extension Split Pipe Clamp:
1. MSS SP-58 type 12, hinged split ring and yoke roller hanger with epoxy copper finish.
2. Material: ASTM A47/A47M malleable iron or ASTM A36/A36M carbon steel.
3. Provide hanger rod and nuts of the same type and material for a given pipe run.
4. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.

C. Offset Pipe Clamps: Double-leg design two-piece pipe clamp.

D. Strut Clamps:
1. Pipe Clamp: Two-piece rigid, universal, or outer diameter type, carbon steel with epoxy copper or zinc finish.
2. Cushioned Pipe or Tubing Strut Clamp: Provide strut clamp with thermoplastic elastomer cushion having dielectric strength of 670 V/mil.
3. Service Temperature Range: Minus 65 to 275 degrees F.

E. Insulation Coupling:
1. Two bolt-type clamps designed for installation under insulation.
2. Material: Carbon steel with epoxy copper or zinc finish.

2.05 PIPE SUPPORTS, GUIDES, SHIELDS, AND SADDLES

A. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.

B. Stanchions:
1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
2. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.
3. For pipe runs, use stanchions of same type and material where vertical adjustment is required for stationary pipe.

C. U-Bolts:

1. MSS SP-58 type 24, carbon steel u-bolt for pipe support or anchoring.

D. Intermediate Anchors and Pipe Alignment Guides:
1. Pipe Sizes 6 inch and Smaller: Minimum clearance of 0.16 inch.
2. Pipe Size 8 inch: 0.625 inch U-bolt with double nuts providing minimum clearance of 0.28 inch.
3. Pipe Size 10 inch: 0.75 inch U-bolt.
4. Use pipe clamps with oversize pipe sleeve that provides clearance around pipe.

E. Pipe Alignment Guides, Galvanized steel:
1. Pipe Sizes 8 inch and Smaller: Spider or sleeve type.
2. Pipe Sizes 10 inch and Larger: Roller type.

F. Pipe Shields for Insulated Piping:
1. MSS SP-58 type 40, ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.
2. General Construction and Requirements:
a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
b. Shields Material: UV-resistant polypropylene with glass fill.
c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
d. Service Temperature: Minus 40 to 178 degrees F.
e. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.

G. Sleeves:
1. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.
2. Sleeves for Pipes Through Non-fire Rated Beams Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
3. Sealant: Acrylic; refer to Section 07 92 00 - Joint Sealers.
4. Sleeves Through Rated Concrete Decks: ASTM E814 (UL 1479), UL Classified for W, L, F, T, and FM approved. Hilti Model Series CP/CPS; HoldRite "Hydroflame" Pro Series, or 3M Fire Barrier Cast-In Devices.
5. Sleeve Through Rated Concrete Floors: 3-hour per ASTME-81A, UL W, L, F, T, and FM approved. Hilti Model Series CP/CPS; HoldRite "Hydroflame" Pro Series.

H. Mechanical sleeve seals.
1. Manufacturers:
a. Thunderline Link-Seal, Inc. Model Series LS.
b. NMP Corporation.
c. Substitutions: See Section 01 25 00 - Substitution Procedures.
2. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

I. Pipe Supports:
1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
2. Liquid Temperatures Up to 122 degrees F:
a. Overhead Support: MSS SP-58 types 1, 3 through 12 clamps.
b. Support From Below: MSS SP-58 types 35 through 38.
3. Operating Temperatures from 122 to 446 degrees F:
a. Overhead Support: MSS SP-58 type 1 or 3 through 12 clamps with appropriate saddle of MSS SP-58 type 40 for insulated pipe.
b. Roller Chair: MSS SP-58 types 41 or 43 through 46 roller chair support with appropriate saddle of MSS SP-58 type 39 for insulated pipe.
c. Sliding Support: MSS SP-58 types 35 through 38.

2.06 ANCHORS AND FASTENERS

A. Manufacturers - Mechanical Anchors:
   1. FNW; 7502: www.fnw.com/#sle.
   2. Hilti, Inc: www.us.hilti.com/#sle.
   3. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com/#sle.
   4. Powers Fasteners, Inc: www.powers.com/#sle.
   5. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
   6. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Manufacturers - Powder-Actuated Fastening Systems:
   1. Hilti, Inc: www.us.hilti.com/#sle.
   2. ITW Ramset, a division of Illinois Tool Works, Inc: www.ramset.com/#sle.
   3. Powers Fasteners, Inc: www.powers.com/#sle.
   4. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
   5. Substitutions: See Section 01 25 00 - Substitution Procedures.

C. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

D. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.

E. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.

F. Hollow Masonry: Use toggle bolts.

G. Hollow Stud Walls: Use toggle bolts.

H. Steel: Use beam ceiling clamps, beam clamps, machine bolts, or welded threaded studs.

I. Beam Ceiling Flanges: ASTM A47/A47M Grade 32510, malleable iron with plain finish.

J. Sheet Metal: Use sheet metal screws.

K. Wood: Use wood screws.

L. Plastic and lead anchors are not permitted.

M. Powder-actuated fasteners are permitted only as follows:
   1. Where approved by Architect.
   2. Use only threaded studs; do not use pins.

N. Hammer-driven anchors and fasteners are not permitted.

O. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

P. Preset Concrete Inserts: Continuous metal strut channel and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
   1. Channel Material: Use galvanized steel.
   2. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch minimum base metal thickness.
   3. Manufacturer: Same as manufacturer of metal strut channel framing system.

Q. Concrete Inserts:
   1. Manufacturers:
      a. Source Limitations: Furnish hardware, fittings, and accessories from single manufacturer.

2.07 FIRESTOPPING

A. Manufacturers:
   1. Specified Technology Inc. (STI) Model SpecSeal Series 100.
   2. Dow Corning Corp.
   3. Hilti Corp.

4. International Protective Coating Corp.
5. 3M fire Protection Products.
6. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
1. Silicone Firestopping Elastomeric Firestopping: Single or multiple component silicone elastomeric compound and compatible silicone sealant.
2. Foam Firestopping Compounds: Single or Multiple component foam compound.
3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
4. Fiber Stuffing and Sealant Firestopping: Composite of mineral or ceramic fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.
8. Color: As selected from manufacturer's full range of colors.

2.08 FIRESTOPPING ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Dam Material: Permanent:
1. Mineral fiberboard.
2. Mineral fiber matting.
3. Sheet metal.
4. Plywood or particle board.
5. Alumina silicate fire board.

C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

D. General:
1. Furnish UL listed products.
2. Select products with rating not less than rating of wall or floor being penetrated.

E. Non-Rated Surfaces:
1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where piping is exposed.
2. For exterior wall openings below grade, furnish mechanical sealing device to continuously fill annular space between piping and cored opening or water-stop type wall sleeve.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION - GENERAL

A. Furnish hardware, fittings, and accessories from single manufacture.

B. Install products in accordance with manufacturer's instructions.

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

D. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, un-poured metal floor decking, or other systems.

E. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

F. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

H. Field-Welding (where approved by Architect): Comply with Section 05 50 00.

I. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.

J. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.

K. Secure fasteners according to manufacturer's recommended torque settings.

L. Remove temporary supports.

3.03 INSTALLATION - EQUIPMENT SUPPORT AND ATTACHMENT

A. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.

B. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.

C. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.

D. Unless otherwise indicated, mount floor-mounted equipment on properly sized 3 inch high concrete pad constructed in accordance with Section 03 30 00.

E. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

3.04 INSTALLATION - INSERTS

A. Install inserts for placement in concrete forms.

B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

3.05 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Install in accordance with ASME B31.9.

B. Support horizontal piping as scheduled.

C. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.

D. Place hangers within 12 inches of each horizontal elbow.

E. Use hangers with 1-1/2 inches minimum vertical adjustment.

F. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

G. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.

H. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

I. Support riser piping independently of connected horizontal piping.

J. Provide copper plated hangers and supports for copper piping.

K. Design hangers for pipe movement without disengagement of supported pipe.

L. Prime coat exposed steel hangers and supports. Refer to Section 09 91 23 - Interior Painting and Coating. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

M. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to 22 07 16 - Plumbing Equipment Insulation.

N. Support of pipe and equipment is to be accomplished by means of engineered products specific to each application. Make shift field devised methods will not be allowed.

3.06 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with mechanical sleeve seals.

B. Set sleeves in position in forms. Provide reinforcing around sleeves.

C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

E. Where piping penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with stuffing or fire-stopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

F. Install chrome plated steel escutcheons at finished surfaces.

3.07 INSTALLATION - FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply fire-stopping material in sufficient thickness to achieve required fire and smoke rating to uniform density and texture.

D. Compress fibered material to maximum 40 percent of its uncompressed size.

E. Place foamed material in layers to ensure homogenous density, filling cavities and spaces.

F. Place sealant to completely seal junctions with adjacent dissimilar materials.

G. Place intumescent coating in sufficient coats to achieve rating required.

H. Remove dam material after firestopping material has cured.

I. Fire Rated Surface:
   1. Seal opening at floor, wall, partition, ceiling, and roof as follows:
      a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
      b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
      c. Pack void with backing material.
      d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.
      e. Where cable tray, bus, cable bus, conduit, wire-way, trough, penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.

J. Non-Rated Surfaces:
   1. Seal opening through non-fire rated wall, partition, floor, ceiling and roof opening as follows:
      a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
   2. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
      a. Install type of firestopping material recommended by manufacturer.
      b. Install escutcheons, floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
      c. Exterior wall openings below grade: Assemble rubber links of mechanical sealing device to size of piping and tighten in place, in accordance with manufacturer's instructions.
      d. Interior partitions: Seal pipe penetrations at clean rooms, laboratories, hospital spaces, computer rooms, telecommunication rooms, data rooms. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

3.08 SCHEDULES

Pipe Size (inches)	Maximum Hanger Spacing (feet)	Hanger Rod Diameter(inches)
1/2 to 1-1/4	6.5	3/8
1-1/2 to 2	10	3/8
2-1/2 to 3	10	1/2
4 to 6	10	5/8
8 to 12	14	7/8
PVC (All Sizes)	6	3/8
C.I. Bell and Spigot (or No Hub) and at Joint	5	3/8

END OF SECTION

SECTION 22 07 19
PLUMBING PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass fiber insulation.

1.02 RELATED REQUIREMENTS

A. Section 22 10 05 - Plumbing Piping: Placement of hangers and hanger inserts.

1.03 REFERENCE STANDARDS

A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.

B. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007 (Reapproved 2019).

C. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2019).

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.07 FIELD CONDITIONS

A. Maintain ambient conditions required by manufacturers of each product.

B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER INSULATION

A. Manufacturers:
   1. Johns Manville Corporation; Micro-Lok HP: www.jm.com/#sle.

2. Owens Corning Corporation; Model SSL II: www.ocbuildingspec.com/#sle.
3. Certain Teed Corporation: www.certainteed.com.
4. Knauf Insulation;Pipe Insulation ASJ-SSL: www.knaufusa.com
5. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm.

C. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

D. Vapor Barrier Lap Adhesive: Compatible with insulation.

E. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.

F. Indoor Vapor Barrier Finish:
1. Cloth: Untreated; 9 oz/sq yd weight.
2. Vinyl emulsion type acrylic, compatible with insulation, black color.

G. Outdoor Vapor Barrier Mastic: Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

H. Outdoor Breather Mastic: Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

I. Insulating Cement: ASTM C449.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.

C. Exposed Piping: Locate insulation and cover seams in least visible locations.

D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.

E. Glass fiber insulated pipes conveying fluids below ambient temperature:
1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.

F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.

G. Glass fiber insulated pipes conveying fluids above ambient temperature:
1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples.
2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

H. Inserts and Shields:
1. Application: Piping 1-1/2 inches diameter or larger.
2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
3. Insert Location: Between support shield and piping and under the finish jacket.

4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.

I. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, see Section 07 84 00.

J. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with PVC jacket and fitting covers.

3.03 SCHEDULES

A. Plumbing Systems:
1. Domestic Hot Water Supply and Recirculation:
a. Glass Fiber, Rigid, Insulation:
1) Pipe Size Range: Under 1-1/2 inch.
2) Thickness: 1 inch.
3) Pipe Size Range: 1-1/2 inch and over.
4) Thickness: 1-1/2 inch.
2. Domestic Cold Water:
a. Glass Fiber, Rigid, Insulation
1) Pipe Size Range: 1 inch and under.
2) Thickness: 1/2 inch.
3) Pipe Size Range: Over 1 inch.
4) Thickness: 1 inch.

END OF SECTION

SECTION 22 10 05
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary waste piping, buried within 5 feet of building.

B. Sanitary waste piping, above grade.

C. Domestic water piping, above grade.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment.

1.03 REFERENCE STANDARDS

A. ANSI Z21.22 - American National Standard for Relief Valves for Hot Water Supply Systems; 2015 (Reaffirmed 2020).

B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2021.

C. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.

D. ASME B31.9 - Building Services Piping; 2020.

E. ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; 2023.

F. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2023.

G. ASSE 1003 - Water Pressure Reducing Valves for Potable Water Distribution Systems; 2023.

H. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).

I. ASTM B32 - Standard Specification for Solder Metal; 2020.

J. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2020.

K. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.

L. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.

M. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.

N. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2023.

O. ASTM C1053 - Standard Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications; 2000 (Reapproved 2015).

P. ASTM C1277 - Standard Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings; 2020.

Q. ASTM D-1248 - Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable; Current Edition, Including All Revisions.

R. ASTM D1248 - Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable; Current Edition, Including All Revisions.

S. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2021a.

T. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings; 2022.

U. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.

V. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2020.

W. ASTM D2661 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings; 2021.

X. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2020.

Y. ASTM D2680 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping; 2020.

Z. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2020.

AA. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2023.

BB. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

CC. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe; 2014 (Reapproved 2021).

DD. ASTM F628 - ASTM F628 2012 Edition, November 15, 2012 Complete Document Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe With a Cellular Core; 2012.

EE. ASTM F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings; 2021.

FF. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing; 2024.

GG. ASTM F877 - Standard Specification for Crosslinked Polyethylene (PEX) Hot- and Cold-Water Distribution Systems; 2024.

HH. ASTM F891 - Standard Specification for Coextruded Poly(Vinyl Chloride) (PVC) Plastic Pipe With a Cellular Core; Current Edition, Including All Revisions.

II. ASTM F1960 - Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-Linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing; 2023b.

JJ. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2019.

KK. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2017.

LL. AWWA C651 - Disinfecting Water Mains; 2023.

MM. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2021.

NN. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2020.

OO. MSS SP-67 - Butterfly Valves; 2022.

PP. MSS SP-71 - Gray Iron Swing Check Valves, Flanged and Threaded Ends; 2018.

QQ. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves; 2019.

RR. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata .

SS. MSS SP-136 - Ductile Iron Swing Check Valves; Current Edition, Including All Revisions .

TT. NSF 61 - Drinking Water System Components - Health Effects; 2023, with Errata.

UU. NSF 372 - Drinking Water System Components - Lead Content; 2022.

VV. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

C. Shop Drawings: For non-penetrating rooftop supports, submit detailed layout developed for this project, with design calculations for loadings and spacings.

D. Project Record Documents: Record actual locations of valves.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with all applicable local codes and standards.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.

D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system. Store pipe on sleepers, a minimum of 4 inches above surrounding grade, at all times.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

B. Plenum-Installed Acid Waste Piping: Flame-spread index equal or below 25 and smoke-spread index equal or below 50 according to ASTM E84 or UL 723 tests.

2.02 SANITARY WASTE PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Cast Iron Pipe: CISPI 301, hubless.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies. Mission Heavyweight, Husky 4000, Clamp-All 120 system, Ideal Triden, or approved.

B. ABS Pipe: ASTM D2661 (Solid Wall)
   1. Fittings: ABS, ASTM D2661
   2. Joints: Solvent welded with ASTM D2235 cement.

C. PVC Pipe: ASTM D2665 (Solid Wall)
   1. Fittings: PVC, ASTM D2665
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 SANITARY WASTE PIPING, ABOVE GRADE

A. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, ASTM C1277, neoprene gaskets and stainless steel clamp-and-shield assemblies. Mission Heavyweight, Husky 4000, Clamp-All 120 system, Ideal Triden, or approved.

B. ABS Pipe: ASTM D2661; ASTM F628 (Foam Core)
   1. Fittings: ABS, ASTM D2661
   2. Joints: Solvent welded with ASTM D2235 cement.

C. PVC Pipe: ASTM D2665 (Solid Wall); ASTM F891 (Foam Core)
   1. Fittings: PVC, ASTM D2665
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.04 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

B. PEX-A Cross-Linked Polyethylene Pipe: ASTM F876 or ASTM F877.
   1. Fittings: ASTM F877 / ASTM F1960, engineered polymer (EP) type and PEX compression ring with end stops matching tube dimensions.
   2. Manifold: ASTM F877 / ASTM F1960, multi-outlet, engineered polymer (EP) assembly with corrosion resistant brass valve for each outlet.

2.05 BALL VALVES

A. Manufacturers:
   1. Hammond Valve Co.; Model 8501 or 8901: www.hammondvalve.com.
   2. Nibco, Inc; Model T/S-FP-600A or T/S-585-80-LF: www.nibco.com/#sle.
   3. Watts; Model FBV-1 or B-6000: www.watts.com.
   4. Stockham; Model S216-BR-R-T : www.stockham.com
   5. Apollo Valves; Model 77CLF: www.apollovalves.com/#sle.
   6. Milwaukee Valve Company; Model BA-125 or BA-100 : www.milwaukeevalve.com.
   7. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Construction, 4 inch and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

C. Up to and including 3-inches:
   1. MSS SP-110, 600 psi CWP, bronze, two-piece body, lead free brass ball, full port, teflon seats and stufing box ring, blow-out proof stem, lever handle solder or threaded ends.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

D. Install piping to maintain headroom, conserve space, and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. See Section 22 05 16.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed.

I. Establish elevations of buried piping outside the building to ensure not less than 2 ft of cover.

J. Provide tracer wire over top of piping.
   1. Construction:
      a. Conductor: Solid or stranded copper per spec ASTM B3.
      b. Insulation: High Molecular Weight Polyethylene (HMWPE) ASTM D-1248. Various insulation colors dependant on usage.
      c. Temperature: 70 degrees C dry and wet.
      d. Voltage: 20 and 30 Mil = 30 to 300 volts. 45 Mil = 600 volts.

K. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.

L. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welding.

M. Provide support for utility meters in accordance with requirements of utility companies.

N. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.

O. Excavate in accordance with specifications.

P. Backfill in accordance with specifications.

Q. Bury PVC and ABP pipe per ASTM D2321.

R. Install valves with stems upright or horizontal, not inverted. See Section 22 05 23.

S. Install water piping to ASME B31.9.

T. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

U. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

V. Sleeve pipes passing through partitions, walls, and floors.

W. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9.
   2. Support horizontal piping as indicated.
   3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   4. Place hangers within 12 inches of each horizontal elbow.
   5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
   7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

8. Provide copper plated hangers and supports for copper piping or sheet lead packing between hanger or support and piping.
9. Provide hangers adjacent to motor-driven equipment with vibration isolation; see Section 22 05 48.
10. Support cast iron drainage piping at every joint.
11. Support of pipe tubing and equipment is to be accomplished by means of engineered products specific to each application. Makeshift field devised methods will not be allowed.

3.04 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections.

B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

C. Install gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.

D. Install globe valves for throttling, bypass, or manual flow control services.

E. Provide lug end butterfly valves adjacent to equipment when provided to isolate equipment.

F. Provide spring-loaded check valves on discharge of water pumps.

G. Provide flow controls in water recirculating systems where indicated.

3.05 TOLERANCES

A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.

B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

END OF SECTION

SECTION 22 40 00
PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Service sinks.

1.02 RELATED REQUIREMENTS

A. Section 22 10 05 - Plumbing Piping.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI Z358.1 - American National Standard for Emergency Eyewash and Shower Equipment; 2014.

C. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration; 2008 (Reaffirmed 2013).

D. ASME A112.6.1M - Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).

E. ASME A112.18.1 - Plumbing Supply Fittings; 2018, with Errata.

F. ASME A112.19.1 - Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures; 2024.

G. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2018, with Errata.

H. ASME A112.19.3 - Stainless Steel Plumbing Fixtures; 2022.

I. ASME A112.19.4M - Porcelain Enameled Formed Steel Plumbing Fixtures; 1994 (Reaffirmed 2009).

J. ASME A112.19.14 - Six-Liter Water Closets Equipped with a Dual Flushing Device; 2013 (Reaffirmed 2018).

K. IAPMO PS 106 - Tileable Shower Receptors and Shower Kits; 2015, with Editorial Revision.

L. IAPMO Z124 - Plastic Plumbing Fixtures; 2022, with Editorial Revision.

M. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

N. NSF 61 - Drinking Water System Components - Health Effects; 2023, with Errata.

O. NSF 372 - Drinking Water System Components - Lead Content; 2022.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

C. Manufacturer's Instructions: Indicate installation methods and procedures.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

E. Maintenance Data: Include fixture trim exploded view and replacement parts lists.

F. Waterless Urinals: Submit recommended frequency of maintenance and parts replacement, methods of cleaning, sources of replacement supplies and parts.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements for additional provisions.
   2. Extra Faucet Washers: One set of each type and size.
   3. Extra Lavatory Supply Fittings: One set of each type and size.

4. Extra Shower Heads: One of each type and size.
5. Extra Toilet Seats: One of each type and size.
6. Flush Valve Service Kits: One for each type and size.
7. Extra Waterless Urinal Trap Seals and Supplies: One year's worth, based on normal, expected use of facility of this type.

1.05 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit fixture, trim, exploded view and replacement parts lists.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of this section with minimum three years experience.

1.07 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.08 PRE-INSTALLTION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Accept fixtures on site in factory packaging. Inspect for damage.

C. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.10 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 SERVICE SINKS

A. Manufacturers:
1. Stern-Williams Model .
2. Mustee.
3. Fiat Model.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Bowl: 28 x 28 x 10 inch high enameled cast iron, corner floor mounted, vinyl bumper guard, stainless steel grid strainer.

C. Trim: ASME A112.18.1 exposed wall type supply with cross handles, spout wall brace, vacuum breaker, hose end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges. Cambridge/Delta Model 28T9, Moen Model 8230, Chicago Model 897, Speakman Model SC-5812-RCP.

D. Accessories:
1. 5 feet of 1/2 inch diameter plain end reinforced rubber hose.
2. Hose clamp hanger.
3. Mop hanger.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.

B. Verify that electric power is available and of the correct characteristics.

C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

A. Install work in accordance with applicable codes.

B. Install each fixture with trap, easily removable for servicing and cleaning.

C. Provide chrome-plated rigid or flexible supplies to fixtures with screwdriver stops, reducers, and escutcheons.

D. Install components level and plumb.

E. Install and secure fixtures in place with wall supports and bolts.

F. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 92 00, color to match fixture.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

A. Section 01 70 00 - Execution Requirements: Testing, adjusting, and balancing.

B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 PROTECTION

A. Protect installed products from damage due to subsequent construction operations.

B. Do not permit use of fixtures by construction personnel.

C. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 26 00 01
BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.01 DESCRIPTION

A. Perform work in accordance with regulations of serving electrical utility, telephone utility, National Electrical Code, National Electrical Safety Code, National Fire Codes, International Building Code, and other applicable codes.

B. Whenever the requirements of the Electrical Specifications or Drawings exceed those of the applicable code or standard, the requirements of the Specifications and Drawings shall govern.

C. This Contractor is bound by the General Conditions, Supplementary Conditions, Special Conditions, and Division 1 bound herewith in addition to this Specification and accompanying Drawings.

D. Bidders shall view the site and shall include costs incurred by existing conditions in the bid proposal.

1.02 QUALITY ASSURANCE

A. Materials shall be new, of manufacturer's latest design and of the best quality. The materials shall be manufactured in accordance with applicable standards of NEMA, ANSI, or UL and shall be UL listed.

B. Complete each system as shown and place in operation except where only rough-in or partial systems are called for. Each system shall be tested and left in proper operation free of faults, shorts, or unintentional grounds.

C. Protect electrical work, wire and cable, materials and equipment installed under this Division against damage by other trades, weather conditions, or any other causes. Equipment found damaged or in other than new condition will be rejected as defective.

1.03 FEES

A. Secure and pay for necessary permits and fees. Arrange for required inspections.

PART 2 PRODUCTS

2.01 MATERIALS AND METHODS

A. Equipment and materials shall be new and free from defects. Material and equipment of the same or a similar type shall match that of the manufacturer and model number predominantly existing on the project. Standard production materials shall be used wherever possible.

B. Work under this division shall be conducted in a manner to cooperate with other trades and contracts involved with this project.

C. Consult drawings and specifications for this project and verify the requirements of equipment by other divisions, the Owner or by other contracts prior to installation and connection.

D. Consult the drawings of other divisions to avoid conflicts with cabinets, counters, equipment, structural members, etc. Resolve any conflicts with the Architect prior to rough-in.

E. Verify connection requirements for equipment specified or shown and provide materials and labor required to connect the equipment.

F. Provide painting of electrical items as required by the Architect.

G. Provide painting in accordance with Division 9 of these specifications.

2.02 INSTALLATION REQUIREMENTS

A. Electrical plans are diagrammatic. Verify exact equipment locations for equipment. Coordinate with architectural drawings and installations to avoid conflicts. Equipment size and location of equipment is shown wherever possible. Make use of the data in the contract documents and verify this information against actual field conditions. As applicable to the work to be

performed, the materials and installation shall conform to the available space, avoid obstruction, preserve headroom, maintain required accessibility, and satisfy the requirements of the governing codes and the standards of good practice. Coordinate with other divisions' drawings and installation to avoid conflicts.

B. Work shall be installed in a neat, inconspicuous, professional manner. Conduit runs shall parallel structural lines where exposed. Conduit shall run parallel to structural lines whenever possible and specifically when exposed. Whenever possible conduits shall be either concealed in the room ceiling, walls, floor, or exposed ceiling areas tight under the tip chord of the ceiling bar joist, or running parallel to the roof wide flange beams, mounted tight to the vertical webs. No conduit shall be run perpendicular to the ceiling roof beams under the bottom chords. No exposed conduit is allowed without prior approval of the Architect. Flexible conduit is allowed only with prior approval of the Architect or Engineer of record.

C. Existing raceways which are empty may be used whenever possible.

D. The site shall be left clean and free of dirt arid debris. Panels, fixtures, outlets and equipment shall be left clean and free of foreign materials and dirt.

2.03 COORDINATION

A. Work under this division shall be conducted in a manner to cooperate with other trades and contracts involved with this project.

B. Consult drawings and specifications for this project and verify the requirements of equipment by other divisions, the Owner, or by other contracts prior to installation and connection.

C. Consult drawings of other divisions to avoid conflicts with cabinets, counters, equipment, structural members, etc. Resolve any conflicts with the Architect prior to rough-in.

D. Contact the electrical utility companies associated with the project and coordinate the final installation requirements with each utility prior to ordering equipment and beginning installation. Acquire utility installation documents and include costs to provide electrical materials and labor noted by the utility to be provided by the Owner (or customer).

PART 3 EXECUTION

3.01 GUARANTEE

A. Guarantee the electrical installation against defects in materials, equipment, and workmanship for one year after the date of acceptance of the work. Defects shall be properly remedied to the satisfaction of the Architect at no cost to the Owner.

END OF SECTION

SECTION 26 05 01
ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition.

1.02 RELATED REQUIREMENTS

A. Section 01 78 00 - Closeout Submittals and Procedures: Additional requirements for alterations work.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify field measurements and circuiting arrangements are as indicated.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Information given on drawings in reference to existing features has been obtained from recent field observation and existing record documents, but cannot be guaranteed to be completely accurate in all respects. Verify all information before proceeding with any work.

D. Demolition drawings are based on casual field observation and existing record documents.

E. Report discrepancies to Architect before disturbing existing installation.

F. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings to be removed.

B. Coordinate utility service outages with utility company.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

D. Existing Electrical Service: Maintain existing system in service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Obtain permission from Owner at least 5 days before partially or completely disabling system.
   2. Make temporary connections to maintain service in areas adjacent to work area.

E. Existing Fire Alarm System: Maintain existing system. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Notify Owner before partially or completely disabling system.
   2. Notify local fire service.
   3. Make notifications at least 5 days in advance.
   4. Make temporary connections to maintain service in areas adjacent to work area.

F. Existing Telephone System: Maintain existing system in service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Notify Owner at least 5 days before partially or completely disabling system.
   2. Notify telephone utility company at least 7 hours before partially or completely disabling system.

3. Make temporary connections to maintain service in areas adjacent to work area.

G. Existing Data Network System: Disable system only to make switchovers and connections. Minimize outage duration.
1. Obtain permission from Owner at least 5 days before partially or completely disabling system.
2. Make temporary connections to maintain service in areas adjacent to work area.

H. The Contractor shall carefully review the Architect's project construction plan and schedule and coordinate all work within those limitations.

I. The Contractor shall visit the site and become thoroughly familiar with the existing conditions prior to bidding. Electrical outlets, devices and equipment shown dashed on the demo plans represent existing devices to be demolished. Existing electrical outlets, devices and equipment to remain are shown with "(E)" designation or otherwise specifically noted.

J. Coordinate work of Division 26 with that of other divisions prior to rough-in.

K. All existing electrical systems, including, but not limited to, light fixtures, conduit, and wiring which are not to be demolished shall be protected from damage during the demolition and construction phases. Systems shall be operational in a manner consistent with the phasing plan and construction schedule.

L. Unless otherwise noted, remove existing fixtures, clocks, horns, switches, receptacles, and other wiring devices from surfaces scheduled for refinishing and reinstall new device.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Remove, relocate, and extend existing installations to accommodate new construction.

B. Remove abandoned wiring to source of supply.

C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

E. Disconnect and remove abandoned panelboards and distribution equipment.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

H. Repair adjacent construction and finishes damaged during demolition and extension work.

I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

K. All labor and materials required to change the existing electrical installation as indicated shall be provided. Drawings are diagrammatic and do not show all existing interconnecting components.

L. If abandoned or demolished outlets, switches, or other devices serve as feed through boxes for other existing electrical equipment, which is being retained, new conduit and wire shall be provided to bypass the abandoned outlets at no additional cost to the Owner. If existing conduits pass through partitions, which are being removed or remodeled, new conduit and wire shall be provided to route around the wall and maintain service to the existing load at no additional cost to the Owner.

M. The Contractor shall have the option to reuse existing raceways as far as practical, provided it remains code accessible, concealed by new work, and not in conflict with demolition. New

conductors installed in existing raceways shall be THHN/THWN. No existing cloth covered conductors or cables shall be reused. Where existing raceways are used, provide supplemental ground conductor to assure continuity of raceway system. Patch and paint walls where surface conduits were removed. Provide stainless steel cover plates on all abandoned J-boxes.

N. All abandoned Class 2, Class 3, and PLTC cables are to be removed in accordance with Article 725 of NEC.

3.04 CLEANING AND REPAIR

A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

B. Clean and repair existing materials and equipment that remain or that are to be reused.

C. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

D. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

E. Owner shall have first right of salvage of electrical materials and equipment intended for demolition. Items not salvaged by the Owner shall become the property of the Contractor and shall be removed from the site.

END OF SECTION

SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single conductor building wire.

B. Metal-clad cable.

C. Wiring connectors.

D. Oxide inhibiting compound.

E. Wire pulling lubricant.

F. Cable ties.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 26 05 01 - Electrical Demolition: Disconnection, removal, and/or extension of existing electrical conductors and cables.

C. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.

D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011 (Reapproved 2017).

C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).

D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).

E. ASTM B800 - Standard Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes - Annealed and Intermediate Tempers; 2005 (Reapproved 2021).

F. ASTM B801 - Standard Specification for Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy for Subsequent Covering or Insulation; 2018.

G. FS A-A-59544 - Cable and Wire, Electrical (Power, Fixed Installation); 2008a (Validated 2019).

H. NEC 210.4(B) - Multiwire Branch Circuits - Disconnection Means; National Electrical Code; 2008.

I. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

J. NECA 104 - Recommended Practice for Installing Aluminum Building Wire and Cable; 2012.

K. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.

L. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

M. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

N. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

O. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

P. UL 267 - Outline of Investigation for Wire-Pulling Compounds; Most Recent Edition, Including All Revisions.

Q. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

R. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

S. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

C. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors. Include proposed modifications to raceways, boxes, wiring gutters, enclosures, etc. to accommodate substituted conductors.

D. Field Quality Control Test Reports.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

C. Nonmetallic-sheathed cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. For branch circuit wiring in dry locations within one- and two-family dwellings and their attached or detached garages, and their storage buildings.
      b. For branch circuit wiring in dry locations within multifamily dwellings permitted to be of Types III, IV, and V construction.
   2. In addition to other applicable restrictions, may not be used:
      a. Where exposed to view.
      b. Where exposed to damage.
      c. For damp, wet, or corrosive locations.

D. Service entrance cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. For unit feeders in dry and protected locations within multifamily dwellings of Types III, IV, and V construction.
   2. In addition to other applicable restrictions, may not be used:
      a. Where exposed to damage.
      b. House panel feeders.

E. Metal-clad cable is n

2.02 CONDUCTOR AND CABLE MANUFACTURERS

A. Cerro Wire LLC: www.cerrowire.com.

B. Encore Wire Corporation: www.encorewire.com.

C. American Insulated Wire: www.leviton.com.

D. Southwire Company: www.southwire.com.

E. General Cable: www.generalcable.com.

F. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.03 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Provide new conductors and cables manufactured not more than one year prior to installation.

D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

E. Comply with NEMA WC 70.

F. Comply with FS A-A-59544 where applicable.

G. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

H. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

I. Conductors for Grounding and Bonding: Also comply with Section 26 05 26.

J. Conductors and Cables Installed in Cable Tray: Listed and labeled as suitable for cable tray use.

K. Conductors and Cables Installed Where Exposed to Direct Rays of Sun: Listed and labeled as sunlight resistant.

L. Conductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum rated, listed and labeled as suitable for use in return air plenums.

M. Conductor Material:
1. Provide copper conductors except where aluminum conductors are specifically indicated or permitted for substitution. Conductor sizes indicated are based on copper unless specifically indicated as aluminum. Conductors designated with the abbreviation "AL" indicate aluminum.
   a. Substitution of aluminum conductors for copper is permitted, when approved by Owner and authority having jurisdiction, only for the following:
      1) Services: Copper conductors size 1/0 AWG and larger.
      2) Feeders: Copper conductors size 1/0 AWG and larger.
   b. Where aluminum conductors are substituted for copper, comply with the following:
      1) Size aluminum conductors to provide, when compared to copper sizes indicated, equivalent or greater ampacity and equivalent or less voltage drop.
      2) Increase size of raceways, boxes, wiring gutters, enclosures, etc. as required to accommodate aluminum conductors.
      3) Provide copper equipment grounding conductor sized according to NFPA 70.
      4) Equip electrical distribution equipment with compression lugs for terminating aluminum conductors.
2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
3. Tinned Copper Conductors: Comply with ASTM B33.
4. Aluminum Conductors (only where specifically indicated or permitted for substitution): AA-8000 series aluminum alloy conductors recognized by ASTM B800 and compact stranded in accordance with ASTM B801 unless otherwise indicated.

N. Minimum Conductor Size:
1. Branch Circuits: 12 AWG.
   a. Exceptions:
      1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
      2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
      3) 20 A, 277 V circuits longer than 150 feet: 10 AWG, for voltage drop.
2. Control Circuits: 14 AWG.

O. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

P. Conductor Color Coding:
1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
   a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
3. Color Code:
   a. 208Y/120 V, 3 Phase, 4 Wire System:
      1) Phase A: Black.
      2) Phase B: Red.
      3) Phase C: Blue.
      4) Neutral/Grounded: White.
   b. Equipment Ground, All Systems: Green.
   c. Isolated Ground, All Systems: Green with yellow stripe.
   d. For control circuits, comply with manufacturer's recommended color code.

2.04 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
1. Copper Building Wire:

a. Cerro Wire LLC: www.cerrowire.com/#sle.
b. Encore Wire Corporation: www.encorewire.com/#sle.
c. Southwire Company: www.southwire.com/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.

2. Aluminum Building Wire (only where specifically indicated or permitted for substitution):
a. Alcan Products Corporation/Alcan Cable: www.cable,alcan.com.
b. Prysmian Power Cables and Systems: www.us.prysmian.com.
c. Southwire Company: www.southwire.com/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
1. Feeders and Branch Circuits:
a. Size 10 AWG and Smaller: Solid or stranded.
b. Size 8 AWG and Larger: Stranded.
2. Control Circuits: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
a. Size 4 AWG and Larger: Type XHHW-2, THHN/THWN, or THHN/THWN-2.
b. Installed Underground: Type XHHW-2, THHN/THWN, or THHN/THWN-2.
2. Aluminum Building Wire (only where specifically indicated or permitted for substitution): Type XHHW-2 or RHH/RHW-2

2.05 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 26 05 26.

C. Wiring Connectors for Splices and Taps:
1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors or compression connectors.
2. Copper Conductors Size 6 AWG and Larger: Use compression connectors.
3. Connectors for Aluminum Conductors: Use compression connectors.

D. Wiring Connectors for Terminations:
1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
2. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
3. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
4. Copper Conductors Size 8 AWG and Larger: Use compression connectors for all connections.
5. Aluminum Conductors: Use compression connectors for all connections.
6. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
7. Conductors for Control Circuits: Use crimped terminals where connectors are required.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. Ideal Industries, Inc: www.idealindustries.com/#sle.
      c. NSI Industries LLC: www.nsiindustries.com/#sle.
      d. Substitutions: See Section 01 25 00 - Substitution Procedures.

H. Mechanical Connectors: Provide bolted type or set-screw type.
   1. Manufacturers:
      a. Burndy LLC: www.burndy.com/#sle.
      b. Ilsco: www.ilsco.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01 25 00 - Substitution Procedures.

I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
   1. Manufacturers:
      a. Burndy LLC: www.burndy.com/#sle.
      b. Ilsco: www.ilsco.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01 25 00 - Substitution Procedures.

J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
   1. Manufacturers:
      a. Burndy LLC: www.burndy.com/#sle.
      b. Ilsco: www.ilsco.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.06 ACCESSORIES

A. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
   1. Manufacturers:
      a. Burndy LLC: www.burndy.com/#sle.
      b. Ideal Industries, Inc: www.idealindustries.com/#sle.
      c. Ilsco: www.ilsco.com/#sle.
      d. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Wire Pulling Lubricant:
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. American Polywater Corporation: www.polywater.com/#sle.
      c. Ideal Industries, Inc: www.idealindustries.com/#sle.
      d. Substitutions: See Section 01 25 00 - Substitution Procedures.
   2. Listed and labeled as complying with UL 267.
   3. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
   4. Suitable for use at installation temperature.

C. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

D. Verify that field measurements are as indicated.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated without specific routing, determine exact routing required.
   3. Arrange circuiting to minimize splices.
   4. Include circuit lengths required to install connected devices within 10 ft of location indicated.
   5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
   6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
   7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits that originate in the same panelboard are shown as separate, combining them together in a single raceway is permitted, under the following conditions:
      a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
      b. Increase size of conductors as required to account for ampacity derating.
      c. Size raceways, boxes, etc. to accommodate conductors.
   8. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.

B. Install products in accordance with manufacturer's instructions.

C. Perform work in accordance with NECA 1 (general workmanship).

D. Install aluminum conductors in accordance with NECA 104.

E. Install nonmetallic-sheathed cable (Type NM-B) in accordance with NECA 121.

F. Install metal-clad cable (Type MC) in accordance with NECA 120.

G. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

H. Exposed Cable Installation (only where specifically permitted):
   1. Route cables parallel or perpendicular to building structural members and surfaces.
   2. Protect cables from physical damage.

I. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

J. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
   1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
   2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.

K. Install conductors with a minimum of 6 inches of slack at each outlet.

L. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.

M. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

N. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

O. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
   5. Connections for Aluminum Conductors: Fill connectors with oxide inhibiting compound where not pre-filled by manufacturer.
   6. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   7. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

P. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
   1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
      b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.
   2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
      b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
   3. Wet Locations: Use heat shrink tubing.

Q. Insulate ends of spare conductors using vinyl insulating electrical tape.

R. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

S. Identify conductors and cables in accordance with Section 26 05 53.

T. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

U. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

V. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1. Contractor shall comply with NEC 210.4(B) by providing a separate neutral conductor for each circuit in a multi-wire branch circuit.

W. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels. Do not attach cables to slack wires. Plastic cable ties shall be plenum rated in plenum spaces.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is only required for services and feeders.

1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.

D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

D. Ground rod electrodes.

1.02 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
   1. Includes oxide inhibiting compound.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

C. Section 26 51 00 - Lighting.

1.03 REFERENCE STANDARDS

A. BICSI TDMM - Telecommunications Distribution Methods Manual, 14th Edition; 2020.

B. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

D. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2022.

E. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. NFPA 780 - Standard for the Installation of Lightning Protection Systems; 2023.

H. TIA-607 - Commercial Building Grounding and Bonding Requirements for Telecommunications; 2013.

I. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination,

preparation, and installation of product.

D. Field quality control test reports.

E. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.

B. Do not use products for applications other than as permitted by NFPA 70 and product listing.

C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

E. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
   2. Grounding Electrode System: Not greater than 25 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
   3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.

F. Grounding Electrode System:
   1. Verify connection to existing required and supplemental grounding electrodes to form grounding electrode system.
      a. Existing ground electrode system shall have continuous grounding electrode conductors without splice or joint.
      b. Report any discrepancies to the engineer of record.
   2. Metal Underground Water Pipe(s):
      a. Existing ground electrode system shall have connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet at an accessible location not more than 5 feet from the point of entrance to the building.
      b. Report any discrepancies to the engineer of record.
   3. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.

G. Service-Supplied System Grounding:

1. For each service disconnect, provide grounding electrode conductor to connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure.
2. For each service disconnect, provide main bonding jumper to connect neutral (grounded) bus to equipment ground bus where not factory-installed. Do not make any other connections between neutral (grounded) conductors and ground on load side of service disconnect.
3. For existing systems, verify existing grounding electrode system and report any discrepancies to the engineer of record.

H. Separately Derived System Grounding:
1. For existing systems, verify existing grounding electrode system and report any discrepancies to the engineer of record.
2. Separately derived systems include, but are not limited to:
   a. Transformers (except autotransformers such as buck-boost transformers).
3. Provide grounding electrode conductor to connect derived system grounded conductor to nearest effictively grounded metal building frame, nearest effectively grounded metal water pipe, or common grounding electrode conductor ground riser. Unless otherwise indicated, make connection at neutral (grounded) bus in source enclosure or neutral (grounded) bus in first disconnecting means.
4. Provide bonding jumper to connect derived system grounded conductor to nearest metal building frame and nearest metal water piping in the area served by the derived system, where not already used as a grounding electrode for the derived system. Make connection at same location as grounding electrode conductor connection.
5. Where common grounding electrode conductor ground riser is used for tap connections to multiple separately derived systems, provide bonding jumper to connect the metal building frame and metal water piping in the area served by the derived system to the common grounding electrode conductor.
6. Outdoor Source: Where the source of the separately derived system is located outside the building or structure supplied, provide connection to grounding electrode at source in accordance with NFPA 70.
7. Provide system bonding jumper to connect system grounded conductor to equipment ground bus. Make connection at same location as grounding electrode conductor connection. Do not make any other connections between neutral (grounded) conductors and ground on load side of separately derived system disconnect.
8. Where the source and first disconnecting means are in separate enclosures, provide supply-side bonding jumper between source and first disconnecting means.

I. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
    a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
    b. Metal gas piping.
    c. Metal process piping.
8. Provide bonding for interior metal air ducts.
9. Provide bonding for metal building frame.
10. Provide bonding for metal siding not effectively bonded through attachment to metal building frame.
11. Provide bonding and equipment grounding for pools and fountains and associated equipment in accordance with NFPA 70.
12. Provide redundant grounding and bonding for patient care areas of health care facilities in accordance with NFPA 70 and NFPA 99.

J. Communications Systems Grounding and Bonding:
1. Verify existing intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70. Report any discrepancies to engineer of record.
2. Verify existing bonding jumper from intersystem bonding termination or building grounding electrode system to each communications room or backboard and provide ground bar for termination. Report any discrepancies to engineer of record.
    a. Bonding Jumper Size: 6 AWG, unless otherwise indicated or required.
    b. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
    c. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.
3. Telecommunications Grounding System:
    a. Install in accordance with BICSI TDMM, TIA/EIA 607, and NFPA 70.
    b. Install grounding and bonding conductors concealed from view as much as possible.
    c. Install grounding for each rack and equipment using #6 AWGTHHN, rated for 90 degrees C, insulated, copper stranded conductor to copper communication grounding bus bar.
    d. Install routing for grounding conductor as short and direct as practical.
    e. Install routing of bonding conductors with minimum number of bends and no splices. Use sweeping bends.
    f. Install bonding connections with listed bolts, clamps, or lugs. Exothermic welding may be used.
    g. Between each communications room, install multiple busbars directly bonded with #6 AWG copper conductor.
    h. Ground data cabinets, racks, cable trays, and mounting hardware located in all telecommunications rooms.
    i. Install ground from each piece of equipment to grounding bar via an insulated cable no smaller than #6 AWG stranded copper wire. Install proper grounding lug on cable where connecting to racks and grounding bar.
    j. Label grounding conductors and grounding bus bars in accordance with BICSI guidelines.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 05 26:
1. Use insulated copper conductors unless otherwise indicated.
    a. Exceptions:

1) Use bare copper conductors where installed underground in direct contact with earth.
2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
a. Exceptions:
1) Use mechanical connectors for connections to electrodes at ground access wells.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
a. Exceptions:
1) Use exothermic welded connections for connections to metal building frame.
4. Manufacturers - Mechanical and Compression Connectors:
a. Burndy LLC: www.burndy.com/#sle.
b. Harger Lightning & Grounding: www.harger.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.
5. Manufacturers - Exothermic Welded Connections:
a. Burndy LLC: www.burndy.com/#sle.
b. Cadweld, a brand of Erico International Corporation: www.erico.com/#sle.
c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.

D. Ground Bars:
1. Description: Copper rectangular ground bars with mounting brackets and insulators.
2. Size: As specified herein.
3. Holes for Connections: As indicated or as required for connections to be made.
4. Manufacturers:
a. Erico International Corporation: www.erico.com/#sle.
b. Harger Lightning & Grounding: www.harger.com/#sle.
c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.

E. Ground Rod Electrodes:
1. Comply with NEMA GR 1.
2. Material: Copper-bonded (copper-clad) steel.
3. Size: 5/8 inch diameter by 10 feet length, unless otherwise indicated.
4. Where rod lengths of greater than 10 feet are indicated or otherwise required, sectionalized ground rods may be used.
5. Manufacturers:
a. Erico International Corporation: www.erico.com/#sle.
b. Galvan Industries, Inc: www.galvanelectrical.com/#sle.
c. Harger Lightning & Grounding: www.harger.com/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.

F. Oxide Inhibiting Compound: Comply with Section 26 05 19.

PART 3 EXECUTION

3.01 PREPARATION

A. Remove paint, rust, mill oils, and surface contaminants at connection points.

3.02 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as indicated.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.03 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
   1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches below finished grade.
   2. Indoor Installations: Unless otherwise indicated, install with 4 inches of top of rod exposed.

D. Make grounding and bonding connections using specified connectors.
   1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
   2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
   3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
   4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

E. Identify grounding and bonding system components in accordance with Section 26 05 53.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Perform inspection, testing, and adjusting in accordance with Section 01 40 00.

C. Inspect and test in accordance with NETA ATS except Section 4.

D. Perform inspections and tests listed in NETA ATS, Section 7.13.

E. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

F. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

G. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete equipment pads.

B. Section 05 50 00 - Metal Fabrications: Materials and requirements for fabricated metal supports.

C. Section 26 05 34 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.

D. Section 26 05 37 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.

E. Section 26 51 00 - Lighting: Additional support and attachment requirements for interior luminaires.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

D. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2018, with Editorial Revision (2020).

E. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry; 2018, with Editorial Revision (2020).

F. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2017, with Editorial Revision (2020).

G. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements; 2023.

H. MFMA-4 - Metal Framing Standards Publication; 2004.

I. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
   2. Coordinate work with other trades to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
   4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.

5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
1. Do not install products on or provide attachment to concrete surfaces until concrete has cured; see Section 03 30 00.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.

C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

D. Evaluation Reports: For products specified as requiring evaluation and recognition by ICC Evaluation Service, LLC (ICC-ES), provide current ICC-ES evaluation reports upon request.

E. Product Data: Provide manufacturer's catalog data for fastening systems.

F. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

B. Maintain at project site one copy of each referenced document that prescribes execution requirements.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
1. Comply with the following. Where requirements differ, comply with most stringent.
a. NFPA 70.
b. Applicable building code.
c. Requirements of authorities having jurisdiction.
2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
3. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or Interek (ETL) as suitable for purpose intended, where applicable.
4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load to be supported with minimum safety factor of 5. Include consideration for vibration, equipment operation, and shock loads where applicable.
5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
6. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
7. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
a. Indoor Dry Locations: Use zinc-plated steel unless otherwise indicated.
b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel or stainless steel unless otherwise indicated.
c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.

d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Materials for Metal Fabricated Supports: See Section 05 50 00.

C. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
2. Conduit Clamps: Bolted type unless otherwise indicated.
3. Manufacturers:
a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
b. Erico International Corporation: www.erico.com/#sle.
c. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
d. Thomas & Betts Corporation: www.tnb.com/#sle.
e. Substitutions: See Section 01 25 00 - Substitution Procedures.

D. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
1. Manufacturers:
a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
b. Erico International Corporation: www.erico.com/#sle.
c. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
d. Thomas & Betts Corporation: www.tnb.com/#sle.
e. Substitutions: See Section 01 25 00 - Substitution Procedures.

E. Metal Channel/Strut Framing Systems:
1. Manufacturers:
a. Cooper Crouse-Hinds, a division of Eaton Corporation[<>]: www.cooperindustries.com/#sle.
b. Thomas & Betts Corporation[<>]: www.tnb.com/#sle.
c. Unistrut, Atkore International Inc; Unistrut: www.unistrut.us/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.
2. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
3. Comply with MFMA-4.
4. Channel/Strut Used as Raceway, Where Indicated: Listed and labeled as complying with UL 5B.
5. Channel Material:
a. Indoor Dry Locations: Use zinc-plated steel or galvanized steel.
b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel or stainless steel.
6. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
7. Minimum Channel Dimensions: 1-5/8 inch wide by 13/16 inch high.

F. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
a. Equipment Supports: 1/2-inch diameter.
b. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch diameter.
c. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch diameter.
d. Trapeze Support for Multiple Conduits: 3/8-inch diameter.
e. Outlet Boxes: 1/4-inch diameter.
f. Luminaires: 1/4-inch diameter.

G. Nonpenetrating Rooftop Supports for Low-Slope Roofs:
1. Manufacturers:
a. Cooper B-Line, a division of Cooper Industries: www.cooperindustries.com.
b. Atkore International Inc; Unistrut: www.unistrut.us/#sle.

c. PHP Systems/Design: www.phpsd.com/#sle.
d. Substitutions: See Section 01 25 00 - Substitution Procedures.

2. Description: Steel pedestals with thermoplastic or rubber bases that rest on top of roofing membrane, not requiring attachment to roof structure and not penetrating roofing assembly, with support fixtures as specified.
3. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
4. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
5. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports.
6. Mounting Height: Provide minimum clearance of 6 inches under supported component to top of roofing.

H. Anchors and Fasteners:
1. Manufacturers - Mechanical Anchors:
a. Hilti, Inc: www.hilti.com/#sle.
b. Power Fasteners, Inc: www.powers.com.
c. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com/#sle.
d. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
e. Substitutions: See Section 01 25 00 - Substitution Procedures.
2. Manufacturers - Powder-Actuated Fastening Systems:
a. Hilti, Inc: www.hilti.com/#sle.
b. Power Fasteners, Inc: www.powers.com.
c. ITW Ramset, a division of Illinois Tool Works, Inc: www.ramset.com/#sle.
d. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
e. Substitutions: See Section 01 25 00 - Substitution Procedures.
3. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
4. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
5. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
6. Hollow Masonry: Use toggle bolts.
7. Hollow Stud Walls: Use toggle bolts.
8. Steel: Use beam clamps, machine bolts, or welded threaded studs.
9. Sheet Metal: Use sheet metal screws.
10. Wood: Use wood screws.
11. Plastic and lead anchors are not permitted.
12. Powder-actuated fasteners are permitted only as follows:
a. Where approved by Architect.
b. Use only threaded studs; do not use pins.
13. Hammer-driven anchors and fasteners are permitted only as follows:
a. Nails are permitted for attachment of nonmetallic boxes to wood frame construction (when specified).
b. Staples are permitted for attachment of nonmetallic-sheathed cable to wood frame construction (when specified).
14. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
b. Comply with MFMA-4.
c. Channel Material: Use galvanized steel.
d. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch minimum base metal thickness.

15. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

2.02 MATERIALS

A. Hangers, Supports, Anchors, and Fastners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.

B. Supports: Fabricated of structural steel or framed steel memebers; galvanized.

C. Anchors and Fasteners:
1. Obtain permission from Architect before using powder-actuated anchors.
2. Concrete Structural Elements: Use precast inserts, expansion anchors, or preset inserts.
3. Steel Structural Elements: Use beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners.
4. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
5. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
6. Solid Masonry Walls: Use expansion anchors or preset inserts.
7. Sheet Metal: Use sheet metal screws.
8. Wood Elements: Use wood screws.

D. Fastener Types:
1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
2. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
3. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
4. Masonry Screw Type Anchors: Complying with ICC-ES AC106.

E. Concrete Adhesive Type Anchors: Complying with ICC-ES AC308.
1. Other Types: As required.
2. Manufacturers:
a. Powers Fasteners, Inc.: www.powers.com.
b. Substitutions: See Section 01 25 00 - Substitution Procedures.
c. Substitutions:
3. Formed Steel Channel:
a. Manufacturer: Kindorf, Unistrut, B-Line, or approved.
b. Substitutions: See Section 01 25 00 - Substitution Procedures.
4. Steel Spring Clips:
a. Manufacturer: Caddy, Raco, T&B, B-Line.
b. Substitutions: See Section 01 25 00 - Substitution Procedures.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install hangers and supports as required to adequately and securely support electrical system components, in a neat and workmanlike manner, as specified in NECA 1.
1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
2. Obtain permission from Architect before drilling or cutting structural members.

C. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.

D. Install surface-mounted cabinets and panelboards with minimum of four anchors.

E. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch off wall.

F. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

G. Perform work in accordance with NECA 1 (general workmanship).

H. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

I. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

J. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

K. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

L. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

M. Field Welding, Where Approved by Architect: See Section 05 50 00.

N. Equipment Support and Attachment:
   1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
   2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Unless otherwise indicated, mount floor-mounted equipment on properly sized concrete pad 3 inches in height; see Section 03 30 00.
   5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

O. Conduit Support and Attachment: See Section 26 05 34 for additional requirements.

P. Box Support and Attachment: See Section 26 05 37 for additional requirements.

Q. Interior Luminaire Support and Attachment: See Section 26 51 00 for additional requirements.

R. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

S. Secure fasteners in accordance with manufacturer's recommended torque settings.

T. Remove temporary supports.

U. Identify independent electrical component support wires above accessible ceilings, where permitted, with color distinguishable from ceiling support wires in accordance with NFPA 70.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 26 05 34
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).

B. Aluminum rigid metal conduit (RMC).

C. Galvanized steel intermediate metal conduit (IMC).

D. PVC-coated galvanized steel rigid metal conduit (RMC).

E. Flexible metal conduit (FMC).

F. Liquidtight flexible metal conduit (LFMC).

G. Galvanized steel electrical metallic tubing (EMT).

H. Rigid polyvinyl chloride (PVC) conduit.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete encasement of conduits.

B. Section 07 84 00 - Firestopping.

C. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Cable assemblies consisting of conductors protected by integral metal armor.

D. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
   1. Includes additional requirements for fittings for grounding and bonding.

E. Section 26 05 29 - Hangers and Supports for Electrical Systems.

F. Section 26 05 37 - Boxes for Electrical Systems.

G. Section 26 05 35 - Surface Raceways for Electrical Systems.

H. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

I. Section 27 05 28 - Pathways for low Voltage Systems Cabling: Additional requirements for communications systems conduits.

J. Section 31 23 16 - Excavation.

K. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.

L. Section 31 23 23 - Fill: Bedding and backfilling.

1.03 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.

B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.

C. ANSI C80.5 - American National Standard for Electrical Rigid Metal Conduit -- Aluminum (ERMC-A); 2020.

D. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit; 2018.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

F. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.

G. NECA 102 - Standard for Installing Aluminum Rigid Metal Conduit; 2004.

H. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

I. NEMA RN 1 - Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Metal Conduit and Intermediate Metal Conduit; 2018.

J. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2020.

K. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.

L. NEMA TC 14 (SERIES) - Reinforced Thermosetting Resin Conduit and Fittings Series; 2015.

M. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

N. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.

O. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.

P. UL 6A - Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel; Current Edition, Including All Revisions.

Q. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.

R. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

S. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.

T. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

U. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

V. UL 1203 - Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations; Current Edition, Including All Revisions.

W. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

X. UL 2419 - Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts installed under other sections or by other.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed in other sections or by others.
   4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
   5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.
   2. For projects with Post Tension (PT) slab construction, submit dimensioned plan showing all conduit sleeves & block out locations to Architect for review.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

C. Shop Drawings:

1. Indicate proposed arrangement for conduits to be installed within structural concrete slabs, where permitted.
2. Include proposed locations of roof penetrations and proposed methods for sealing.

D. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2-inch (53 mm) trade size and larger.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Documents at Project Site: Maintain at project site one copy of manufacturer's instructions, shop drawings, and reference standard documents containing execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:
1. Under Slab on Grade: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), PVC-coated galvanized steel rigid metal conduit (RMC), or rigid PVC conduit.
2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), PVC-coated galvanized steel rigid metal conduit, or rigid PVC conduit.
3. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC) where emerging from underground.
4. Where rigid polyvinyl (PVC) conduit larger than 2-inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit (RMC) elbows, galvanized steel intermediate metal conduit (IMC) elbows, or fiberglass for bends in runs over 100 feet. For shorter runs, factory formed Schedule 40 PVC may be used.
5. 1.5 Inches Diameter and Smaller: For total conduit lengths between pull points over 100 ft., use rigid steel elbows. For shorter overall lengths, rigid steel or Schedule 40 PVC may be used.
6. Where galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC) is installed in direct contact with earth where soil has resistivity of less than 2000 ohm-centimeters or is characterized as severely corrosive based on soils report or local experience, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection.

D. Embedded Within Concrete:
1. Within Slab on Grade (within structural slabs only where approved by Structural Engineer): Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), PVC-coated galvanized steel rigid metal conduit (RMC), or rigid PVC conduit.
2. Within Slab Above Ground (within structural slabs only where approved by Structural Engineer): Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate

metal conduit (IMC), PVC-coated galvanized steel rigid metal conduit (RMC), or rigid PVC conduit.

3. Within Concrete Walls Above Ground: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), PVC-coated galvanized steel rigid metal conduit (RMC), or rigid PVC conduit.
4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) where emerging from concrete.
5. Where galvanized steel electrical metallic tubing (EMT) emerges from concrete into salt air, use corrosion protection tape acceptable to authorities having jurisdiction to provide supplementary corrosion protection for minimum of 4 inches on either side of where conduit emerges, or use PVC-coated galvanized steel rigid metal conduit.

E. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT).

F. Concealed Within Hollow Stud Walls: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT).

G. Concealed Above Accessible Ceilings: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).

H. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC).

I. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT).

J. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC).
1. Locations subject to physical damage include, but are not limited to:
a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
b. Where exposed below 20 feet in warehouse and manufacturing areas.

K. Exposed, Exterior: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or PVC-coated galvanized steel rigid metal conduit (RMC).

L. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC).

M. Corrosive Locations Above Ground: Use aluminum rigid metal conduit (RMC) or PVC-coated galvanized steel rigid metal conduit (RMC).
1. Corrosive locations include, but are not limited to:
a. Cooling towers.
b. Swimming pools and associated equipment areas.

N. Hazardous/Classified Locations: Use galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC).

O. Flexible Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit (FMC).
1. Maximum Length: 6 feet.

P. Flexible Connections to Vibrating Equipment:
1. Dry Locations: Use flexible metal conduit (FMC).
2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
3. Maximum Length: 6 feet unless otherwise indicated.
4. Vibrating equipment includes, but is not limited to:
a. Transformers.
b. Motors.

Q. Fished in Existing Walls, Where Necessary: Use flexible metal conduit (FMC) or MC cable.

2.02 CONDUIT - GENERAL REQUIREMENTS

A. Comply with NFPA 70.

B. Electrical Service Conduits.

C. Communications Systems Conduits: Also comply with Section 27 10 00 or 27 13 43.

D. Fittings for Grounding and Bonding: See Section 26 05 26 for additional requirements.

E. Provide conduit, fittings, supports, and accessories required for complete raceway system.

F. Provide products listed, classified, and labeled as suitable for purpose intended.

G. Minimum Conduit Size, Unless Otherwise Indicated:
1. Branch Circuits: 1/2-inch trade size.
2. Branch Circuit Homeruns: 3/4-inch trade size.
3. Control Circuits: 1/2-inch trade size.
4. Flexible Connections to Luminaires: 1/2-inch trade size.
5. Underground, Interior: 3/4-inch trade size.
6. Underground, Exterior: 3/4-inch trade size.

H. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
2. Republic Conduit: www.republic-conduit.com.
3. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.

B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com.
2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
3. Hazardous/Classified Locations: Use fittings listed and labeled as complying with UL 1203 for classification of installed location.
4. Material: Use steel or malleable iron.
a. Do not use die cast zinc fittings.
5. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 ALUMINUM RIGID METAL CONDUIT (RMC)

A. Manufacturers:
1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
2. Nucor Tubular Products: www.nucortubular.com/#sle.
3. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
4. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.

B. Description: NFPA 70, Type RMC aluminum rigid metal conduit complying with ANSI C80.5 and listed and labeled as complying with UL 6A.

C. Fittings:
1. Manufacturers:

a. ABB; T&B: www.electrification.us.abb.com/#sle.
b. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.us/#sle.
c. Bridgeport Fittings, LLC: www.bptfittings.com/#sle.
d. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.

2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6A
3. Material: Use aluminum.
4. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.05 GALVANIZED STEEL INTERMEDIATE METAL CONDUIT (IMC)

A. Manufacturers:
1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
2. Republic Conduit: www.republic-conduit.com.
3. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.

B. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings, LLC: www.bptfittings.com/#sle.
b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com.
2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.
3. Hazardous/Classified Locations: Use fittings listed and labeled as complying with UL 1203 for classification of installed location.
4. Material: Use steel or malleable iron.
a. Do not use die cast zinc fittings.
5. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.06 PVC-COATED GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
1. ABB; Ocal: www.electrification.us.abb.com/#sle.
2. Calbond, a division of Atkore International www.calbond.com/#sle
3. Robroy Industries: www.robroy.com/#sle.

B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit with external polyvinyl chloride (PVC) coating complying with NEMA RN 1 and listed and labeled as complying with UL 6.

C. Exterior Coating: Polyvinyl chloride (PVC), nominal thickness of 40 mil, 0.040 inch.

D. PVC-Coated Boxes and Fittings:
1. Manufacturer: Same as manufacturer of PVC-coated conduit to be installed.
2. Nonhazardous Locations: Use boxes and fittings listed and labeled as complying with UL 514A, UL 514B, or UL 6.
3. Hazardous/Classified Locations: Use fittings listed and labeled as complying with UL 1203 for classification of installed location.
4. Material: Use steel or malleable iron.
5. Exterior Coating: Polyvinyl chloride (PVC), minimum thickness of 40 mil, 0.040 inch.

E. PVC-Coated Supports: Furnish with exterior coating of polyvinyl chloride (PVC), minimum thickness of 15 mil, 0.015 inch.

2.07 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:
   1. AFC Cable Systems, a division of Atkore International: www.afcweb.com/#sle.
   2. Electri-Flex Company: www.electriflex.com/#sle.
   3. International Metal Hose: www.metalhose.com/#sle.

B. Description: NFPA 70, Type FMC standard-wall steel or standard-wall aluminum flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.

C. Fittings:
   1. Manufacturers:
      a. Bridgeport Fittings, LLC: www.bptfittings.com/#sle.
      b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel, malleable iron, or aluminum.
      a. Do not use die cast zinc fittings.

2.08 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Manufacturers:
   1. AFC Cable Systems, a division of Atkore International: www.afcweb.com/#sle.
   2. Electri-Flex Company: www.electriflex.com/#sle.
   3. International Metal Hose: www.metalhose.com/#sle.

B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel or aluminum flexible metal conduit listed and labeled as complying with UL 360.

C. Fittings:
   1. Manufacturers:
      a. Bridgeport Fittings, LLC: www.bptfittings.com/#sle.
      b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel, malleable iron, or aluminum.
      a. Do not use die cast zinc fittings.

2.09 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
   1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
   2. Republic Conduit: www.republic-conduit.com.
   3. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.

B. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

C. Fittings:
   1. Manufacturers:
      a. Bridgeport Fittings, LLC: www.bptfittings.com/#sle.
      b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel.

4. Connectors and Couplings: Use set-screw except when embedded in concrete. Use conrete right compression (gland) type in contrete.
    a. Do not use indenter type connectors and couplings.

2.10 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Manufacturers:
1. ABB; Carlon: www.carlon.com/#sle.
2. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
3. Cantex Inc: www.cantexinc.com/#sle.
4. JM Eagle: www.jmeagle.com/#sle.

B. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

C. Fittings:
1. Manufacturer: Same as manufacturer of conduit to be connected.
2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

D. Elbows:
1. Use only factory formed Schedule 40 elbows. Field bends are not acceptable.
2. 1.5 Inches Diameter and Smaller: For total conduit lengths between pull points over 100 ft., use rigid steel elbows. For shorter overall lengths, rigid steel or Schedule 40 PVC may be used.
3. 2 Inches Diameter and Larger: For total conduit lengths between pull points over 100 ft., use long sweep rigid steel or fiberglass elbows. For shorter overall lengths, rigid steel, fiberglass, or Schedule 40 PVC elbows may be used.

2.11 ACCESSORIES

A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil, 0.020 inch.

B. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.

C. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

D. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.

E. Sealing Compound for Hazardous/Classified Location Sealing Fittings: Listed for use with particular fittings to be installed.

F. Sealing Systems for Concrete Penetrations:
1. Sleeves: Provide water stop ring or cement coating that bonds to concrete to prevent water infiltration.
2. Rate for minimum of 40 psig; suitable for sealing around conduits to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install aluminum rigid metal conduit (RMC) in accordance with NECA 102.

E. Install intermediate metal conduit (IMC) in accordance with NECA 101.

F. Install PVC-coated galvanized steel rigid metal conduit (RMC) using only tools approved by manufacturer.

G. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

H. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated without specific routing, determine exact routing required.
   3. Conceal conduits unless specifically indicated to be exposed.
   4. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.
   5. Unless otherwise approved, do not route exposed conduits:
      a. Across floors.
      b. Across roofs.
      c. Across top of parapet walls.
      d. Across building exterior surfaces.
   6. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
   7. Arrange conduit to maintain adequate headroom, clearances, and access.
   8. Arrange conduit to provide no more than equivalent of three 90-degree bends between pull points.
   9. Arrange conduit to provide no more than 150 feet between pull points.
   10. Route conduits above water and drain piping where possible.
   11. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
   12. Maintain minimum clearance of 12 inches between conduits and hot surfaces.
   13. Group parallel conduits in same area on common rack.

I. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 05 29.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
   3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
   4. Use conduit strap to support single surface-mounted conduit.
      a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
   5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.
   6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
   7. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
   8. Use nonpenetrating rooftop supports to support conduits routed across rooftops, where approved.
   9. Use of spring steel conduit clips for support of conduits is not permitted.

10. Use of wire for support of conduits is not permitted.
11. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with most stringent requirements.

J. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
3. Use suitable adapters where required to transition from one type of conduit to another.
4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
6. Where spare conduits stub up through concrete floors and are not terminated in box or enclosure, provide threaded couplings equipped with threaded plugs set flush with finished floor.
7. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
8. Secure joints and connections to provide mechanical strength and electrical continuity.

K. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Make penetrations perpendicular to surfaces unless otherwise indicated.
3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
4. Conceal bends for conduit risers emerging above ground.
5. Provide suitable sealing system where conduits penetrate exterior wall below grade.
6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
8. Provide metal escutcheon plates for conduit penetrations exposed to public view.
9. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 07 84 00.

L. Underground Installation:
1. Provide trenching and backfilling; see Section 31 23 16 and Section 31 23 23.
2. Minimum Cover, Unless Otherwise Indicated or Required:
   a. Underground, Exterior: 24 inches.
   b. Under Slab on Grade: 12 inches to bottom of slab.
3. Provide underground warning tape along entire conduit length for service entrance where not concrete-encased; see Section 26 05 53.

M. Embedment Within Structural Concrete Slabs (only where approved by Structural Engineer):
1. Include proposed conduit arrangement with submittals.
2. Maximum Conduit Size: 1-inch trade size unless otherwise approved.
3. Minimum Conduit Spacing: Shall be as directed by Structural Engineer.
4. Install conduits within middle one third of slab thickness.
5. Secure conduits to prevent floating or movement during pouring of concrete.

N. Concrete Encasement: Where conduits not otherwise embedded within concrete are indicated to be concrete-encased, provide minimum concrete cover of 3 inches on all sides unless otherwise indicated; see Section 03 30 00.

O. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
   1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
   2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
   3. Where conduits are subject to earth movement by settlement or frost.

P. Conduit Sealing:
   1. Use seal fitting or approved sealing compound to prevent entry of moisture and gases. This includes, but is not limited to:
      a. Where conduits enter building from outside.
      b. Where service conduits enter building from underground distribution system.
      c. Where conduits enter building from underground.
      d. Where conduits may transport moisture to contact live parts.
   2. Where conduits cross barriers between areas of potential substantial temperature differential, use seal fitting or approved sealing compound at accessible point near penetration to prevent condensation. This includes, but is not limited to:
      a. Where conduits pass from outdoors into conditioned interior spaces.
      b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
      c. Where conduits penetrate coolers or freezers.
   3. Where conduits cross boundaries of hazardous/classified locations, provide identified/listed sealing fittings located as indicated or in accordance with NFPA 70.

Q. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

R. Do not cross conduits in slab.

S. Cut conduit square useing saw or pipecutter; de-burr cut ends.

T. Bring conduit to shoulder of fittings; fasten securely.

U. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes minimum.

V. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

W. All elbows installed in primary and secondary power conduit runs shall be minimum 36-inch radius.

X. Where conduit is shown stubbed into a telephone, computer or communication terminal area, conduit shall be stubbed up 6 inches below ceiling and terminated with insulating bushings.

Y. Where the contractor elects to utilize PVC in lieu of GRC, the contractor shall provide supplemental ground bus in terminating switch and panelboards, and green ground wire as per code rules.

Z. Conduit runs shall not exceed 100 feet without an accessible pull box installed in line.

AA. Communications system conduit run above the ceiling shall not be installed within 12 inches of a parallel run of current carrying conductors, transformers, feeder cables, motors, or lighting drivers.

BB. Conduit connections between outlet boxes less than 24 inches apart on opposite sides of a wall shall be made with a loop of flexible conduit to limit sound transmission.

CC. Penetrations of Masonry and Concrete Constructions:
   1. Ensure that the sound control performance of structures be maintained in accordance with the drawings and specifications. All penetrations shall be installed in a manner that results in complete air tightness through structure. If a condition occurs where penetration

of the structure by a conduit is not shown clearly on the drawings (or described in the specifications), the Contractor shall ask immediately for clarification of the method necessary to install the particular item.

DD. Penetrations of Drywall Constructions:
1. Ensure that the sound control performance of structures be maintained in accordance with the drawings and specifications. All penetrations shall be installed in a manner that results in complete air tightness through structure. If a condition occurs where penetration of the structure by a conduit is not shown clearly on the drawings (or described in the specifications), the Contractor shall ask immediately for clarification of the method necessary to install the particular item.

EE. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

FF. To attenuate objectionable EMI and RFI signals, the audio and video system raceway groups shall maintain a specified minimum distance separation whenever possible within the constraints of the building's architecture. System conduit groups that run parallel with each other shall adhere to the following table of minimum distance separation:

Audio/Video Sub-System	Microphone	Line	Speaker	Video
Microphone	Adjacent	6 inches	12 inches	12 inches
Line	6 inches	Adjacent	12 inches	6 inches
Speaker	12 inches	6 inches	Adjacent	6 inches
Video	12 inches	6 inches	6 inches	Adjacent

GG. Audio and video system conduit that runs parallel with AC power conduit shall be separated by at least 3 feet minimum.

HH. Audio and video system conduit that runs across or perpendicular to AC power conduit shall be separated by at least 1 foot minimum.

II. To attenuate objectionable EMI and RFI signals, the telecommunications system raceway and cable shall maintain a specified minimum distance separation whenever possible within the constraints of the building's architecture.

Condition	Minimum Separation Distance
Unshielded power lines or electrical equipment in proximity to open or nonmetal telecommunication pathways	24 inches
Unshielded power lines or electrical equipment in proximity to a grounded metal telecommunication conduit pathway	12 inches
Power lines enclosed in a grounded metal conduit (or equivalent shielding) in proximity to a grounded metaltelecommunication conduit pathway	12 inches
Electrical motors, transformers, generators, frequency converters, and UPS systems	47 inches

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Where coating of PVC-coated galvanized steel rigid metal conduit (RMC) contains cuts or abrasions, repair in accordance with manufacturer's instructions.

C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 05 35
SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wireways.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 29 - Hangers and Supports for Electrical Systems.

C. Section 26 05 34 - Conduit for Electrical Systems.

D. Section 26 05 37 - Boxes for Electrical Systems.

E. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

D. UL 870 - Wireways, Auxiliary Gutters, and Associated Fittings; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the placement of raceways with millwork, furniture, equipment, etc. installed under other sections or by others.
   2. Verify minimum sizes of raceways with the actual conductors and components to be installed.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install raceways until final surface finishes and painting are complete.
   2. Do not begin installation of conductors and cables until installation of raceways is complete between outlet, junction and splicing points.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including dimensions, knockout sizes and locations, materials, fabrication details, finishes, service condition requirements, and accessories.

C. Shop Drawings:
   1. Wireways: Provide dimensioned plan and elevation views including adjacent equipment with all required clearances indicated.

D. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 RACEWAY REQUIREMENTS

A. Provide all components, fittings, supports, and accessories required for a complete raceway system.

B. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc (UL) or Intertek (ETL) as suitable for the purpose intended.

C. Do not use raceways for applications other than as permitted by NFPA 70 and product listing.

2.02 WIREWAYS

A. Manufacturers:
1. Cooper B-Line, a division of Cooper Industries: www.cooperindustries.com/#sle.
2. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
3. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
4. Siemens: www.usa.siemens.com.
5. GE: www.ge.com.

B. Description: Lay-in wireways and wiring troughs with removable covers; listed and labeled as complying with UL 870.

C. Wireway Type, Unless Otherwise Indicated:
1. Indoor Clean, Dry Locations: NEMA 250, Type 1, painted steel or Type 12, painted steel with screw cover, hinged cover, or secured with screws.
2. Outdoor Locations: NEMA 250, Type 3R, painted steel with screw cover, hinged cover, or secured with screws.

D. Finish for Painted Steel Wireways: Manufacturer's standard grey unless otherwise indicated.

E. Minimum Wireway Size: 4 by 4 inches unless otherwise indicated.

F. Where wireway size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive raceways and that final surface finishes are complete, including painting.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install raceways plumb and level.

D. Arrange wireways and associated raceway connections to comply with NFPA 70, including but not limited to requirements for deflected conductors and wireways used as pullboxes. Increase size of wireway where necessary.

E. Secure and support raceways in accordance with Section 26 05 29 at intervals complying with NFPA 70 and manufacturer's requirements.

F. Close unused raceway openings.

G. Provide grounding and bonding in accordance with Section 26 05 26.

H. Identify raceways in accordance with Section 26 05 53.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect raceways for damage and defects.

C. Correct wiring deficiencies and replace damaged or defective raceways.

3.04 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 PROTECTION

A. Protect installed raceways from subsequent construction operations.

END OF SECTION

SECTION 26 05 37
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

C. Boxes for hazardous (classified) locations.

D. Underground boxes/enclosures.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 07 84 00 - Firestopping.

C. Section 08 31 00 - Access Doors and Panels: Panels for maintaining access to concealed boxes.

D. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

E. Section 26 05 29 - Hangers and Supports for Electrical Systems.

F. Section 26 05 34 - Conduit for Electrical Systems:
   1. Conduit bodies and other fittings.
   2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.

G. Section 26 05 35 - Surface Raceways for Electrical Systems:
   1. Lay-in wireways and wiring troughs with removable covers.

H. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

I. Section 26 27 26 - Wiring Devices:
   1. Wall plates.
   2. Additional requirements for locating boxes for wiring devices.

J. Section 27 05 28 - Pathways for Low Voltage Systems Cabling: Additional requirements for communications systems outlet boxes.

K. Section 27 10 00 - Structured Cabling: Additional requirements for communications systems outlet boxes.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

E. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. SCTE 77 - Specifications for Underground Enclosure Integrity; 2023.

H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

J. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.

K. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
   4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
   5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
   6. Coordinate the work with other trades to preserve insulation integrity.
   7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
   8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

C. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, and underground boxes/enclosures.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Keys for Lockable Enclosures: Two of each different key.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Provide products listed with Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

C. Electrical boxes shall be sized accordingl to NEC requirements unless otherwise noted in contract documents.

D. Maintain integrity of insulation materials where flush boxes are installed in insulated spaces.

E. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:

1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled as suitable for the purpose intended.
4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
3. Use cast iron boxes or cast aluminum boxes where exposed galvanized steel rigid metal conduit or exposed intermediate metal conduit (IMC) is used.
4. Use cast aluminum boxes where aluminum rigid metal conduit is used.
5. Use suitable concrete type boxes where flush-mounted in concrete.
6. Use suitable masonry type boxes where flush-mounted in masonry walls.
7. Use raised covers suitable for the type of wall construction and device configuration where required.
8. Use shallow boxes where required by the type of wall construction.
9. Do not use "through-wall" boxes designed for access from both sides of wall.
10. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
11. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
12. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
13. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
14. Minimum Box Size, Unless Otherwise Indicated:
    a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
    b. Communications Systems Outlets: Comply with Section 27 10 00.
    c. Ceiling Outlets: 4 inch octagonal or square by 1-1/2 inch deep (100 by 38 mm) trade size.
15. Wall Plates: Comply with Section 26 27 26.
16. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Hubbell Incorporated; Bell Products: www.hubbell-rtb.com/#sle.
    c. Hubbell Incorporated; RACO Products: www.hubbell-rtb.com/#sle.
    d. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
    e. Thomas & Betts Corporation: www.tnb.com/#sle.
    f. Aplleton Electric: www.emerson.com/en-us/automation/appleton.
    g. Substitutions: See Section 01 25 00 - Substitution Procedures.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:

a. Indoor Clean, Dry Locations: Type 1, painted steel.
b. Outdoor Locations: Type 3R, painted steel.

3. Junction and Pull Boxes Larger Than 100 cubic inches:
   a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
   b. Boxes 6 square feet and Larger: Provide hinged-cover enclosures.
4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
   a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.
   b. Back Panels: Painted steel, removable(where applicable).
5. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
6. Manufacturers:
   a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
   b. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
   c. Hubbell Incorporated; Wiegmann Products: www.hubbell-wiegmann.com/#sle.
   d. Substitutions: See Section 01 25 00 - Substitution Procedures.

D. Electrical Outlet Box Pad:
1. Electrical outlet box pads shall be applied where called out on the drawings or specifications. Its function is to seal box openings, increase mass, and provide damping to reduce air-transmitted sound through party walls. It shall consist of polybutene-butyl and inert fillers. Material shall provide good adhesion to metal and plastic. Pads shall be applied to the backs of installed electrical boxes, molded to box, and folded around conduit cable entering the box. Pads shall not be used in areas subject to temperatures above 200 degrees F.
2. The following are acceptable, subject to the above:
   a. FireStop Putty Pad (#CP617) from HILTI: www.hilti.com.
   b. SpecSeal firestop putty pads (fire-rated) from Specified Technologies, Incorporated, Somerville: www.stifirestop.com.
   c. Or approved equal.
3. In-Ground Cast Metal Box: NEMA 250, Type 6, flanged, recessed cover box for flush mounting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide separate boxes for emergency power and normal power systems.

E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.

G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

H. Box Locations:

1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 31 00 as required where approved by the Architect.
    a. Adjust box locations up to 10 feet if required to accomodate intended purpose, at no additional cost to Owner.
2. Locate boxes as required for devices installed under other sections or by others.
    a. Switches, Receptacles, and Other Wiring Devices: Comply as indicated on drawings.
    b. Communications Systems Outlets: Comply as indicated on drawings.
3. Locate boxes so that wall plates do not span different building finishes.
4. Locate boxes so that wall plates do not cross masonry joints.
5. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
6. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 24 inches horizontal separation unless otherwise indicated.
7. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
    a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
    b. Do not install flush-mounted boxes with area larger than 16 square inches or such that the total aggregate area of openings exceeds 100 square inches for any 100 square feet of wall area.
8. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 05 34.
9. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
    a. Concealed above accessible suspended ceilings.
    b. Within joists in areas with no ceiling.
    c. Electrical rooms.
    d. Mechanical equipment rooms.

I. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.

J. Install boxes plumb and level.

K. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

L. Floor-Mounted Cabinets: Mount on properly sized 3 inch high concrete pad constructed in accordance with Section 03 30 00.

M. Install boxes as required to preserve insulation integrity.

N. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

P. Close unused box openings.

Q. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

R. Provide grounding and bonding in accordance with Section 26 05 26.

S. Identify boxes in accordance with Section 26 05 53.
   1. Adjust box locations up to 10 feet if required to accommodate intended purpose, at no additional cost to Owner.

T. Orient boxes to accommodate wiring device orientation as specified in Section 26 27 26.

U. Maintain headroom and present neat mechanical appearance.

V. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

W. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.

X. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

Y. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.

Z. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
   1. Acoustic rated walls.
      a. In a single stud wall, there shall be a separation of 24 inches between centerlines of outlet boxes or receptacles set into opposite sides of the wall. When these boxes are of dimensions exceeding 4 inches wide, this dimension (24 inches) shall be clear between the side walls, providing a full 24-inch separation regardless of the box size. Conduit connecting such boxes shall be flexible and shall provide 6 inches slack per 24 inches of run.
      b. In a double stud wall, boxes in opposite sides of the wall shall be located 24 inches on center, minimum. Effectively, this means that boxes on the same side of the wall will be 48 inches apart if there is a box between them on the other side of the wall. Conduit, in the case of a double wall, shall home run to a point outside of the partition before connecting to cable and conduit connecting boxes on the other side. Conduit, which shall be flexible, may thread through the studs on its own side but shall under no circumstances interface with the stud on the other side of the wall.
      c. The boxes shall be treated to reduce sound transmission. All unused knock-out holes shall be plugged with knock-out caps. The openings or cutouts in the walls to receive the boxes/receptacles shall be made no more than 1-1/4 inches oversize to allow a gap all around of 1-1/8 inches. The flanges shall be perimeter sealed with acoustical caulking, prior to the boxes/receptacles being inserted.
      d. An outlet box pad, which acts to increase mass and provides damping, shall be applied to the backs of back-to-back electrical boxes separated by less than 24 inches, or where the box is installed in acoustical barrier walls. Refer to architectural wall types.

AA. Use stamped steel bridges to fasten flush mounting outlet box between studs.

BB. Use adjustable steel channel fasteners for hung ceiling outlet box.

CC. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.

DD. Locate outlet boxes so that the wall plates do not cross masonry joints or span different building finishes.

3.03 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

B. Clean exposed surfaces and restore finishes.

3.04 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

3.05 INTERFACE WITH OTHER PRODUCTS

A. Coordinate installation of outlet box with products furnished under other sections of these specifications.

B. Coordinate locations and sizes of required access doors.

C. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

D. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes with architectural drawings.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical identification requirements.

B. Identification nameplates and labels.

C. Wire and cable markers.

D. Underground warning tape.

1.02 RELATED REQUIREMENTS

A. Section 09 91 13 - Exterior Painting.

B. Section 09 91 23 - Interior Painting.

C. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

D. Section 26 27 26 - Wiring Devices: Device and wallplate finishes; factory pre-marked wallplates.

E. Section 27 05 28 - Pathways for Low Voltage Systems Cabling: Additional requirements for communications systems outlet boxes.

F. Section 27 10 00 - Structured Cabling: Identification for communications cabling and devices.

1.03 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. NFPA 70E - Standard for Electrical Safety in the Workplace; 2024.

C. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.

B. Sequencing:
   1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
   2. Do not install identification products until final surface finishes and painting are complete.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

1.06 FIELD CONDITIONS

A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

A. Existing Work: Unless specifically excluded, identify existing elements to remain whose designations are changed as part of the new work.

B. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Switchboards:

1) Identify ampere rating.
2) Identify voltage and phase.
3) Identify power source.
4) Use identification nameplate to identify main overcurrent protective device.
5) Use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
6) Available 3 phase fault current.

b. Panelboards:
1) Identify ampere rating.
2) Identify voltage and phase.
3) Identify power source.
4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
5) Use computer generated circuit directory to update and identify load(s) served for panelboards with a door. Identify spares and spaces. Identify load type, circuit number, breaker size and number of poles, and circuit load in volt-amps.
6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.

c. Transformers:
1) Identify kVA rating.
2) Identify voltage and phase for primary and secondary.
3) Identify power source.
4) Identify load(s) served.

d. Enclosed switches, circuit breakers, and motor controllers:
1) Identify voltage and phase.
2) Identify power source and circuit number.
3) Identify load(s) served.

e. Time Switches:
1) Identify load(s) served and associated circuits controlled. Include location.

f. Enclosed Contactors:
1) Identify voltage and phase.
2) Identify configuration, e.g., E.O.E.H. (electrically operated, electrically held) or E.O.M.H. (electrically operated, mechanically held).
3) Identify coil voltage.
4) Identify load(s) and associated circuits controlled. Include location.

2. Service Equipment:
a. Use identification nameplate to identify each service disconnecting means.
b. For buildings or structures supplied by more than one service, or any combination of branch circuits, feeders, and services, use identification nameplate or means of identification acceptable to authority having jurisdiction at each service disconnecting means to identify all other services, feeders, and branch circuits supplying that building or structure. Verify format and descriptions with authority having jurisdiction.
c. Use identification nameplate or identification label at each piece of service equipment to identify available fault current and the date calculations were performed.

3. Emergency System Equipment:
a. Use identification nameplate or voltage marker to identify emergency system equipment in accordance with NFPA 70.
b. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.
c. Use identification nameplate to identify emergency operating instructions for emergency system equipment.

4. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
5. Use identification label or handwritten text using indelible marker on inside of door at each motor controller to identify nameplate horsepower, full load amperes, code letter, service factor, voltage, and phase of motor(s) controlled.
6. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
   a. Service equipment.
   b. Industrial control panels.
   c. Motor control centers.
   d. Elevator control panels.
   e. Industrial machinery.
7. Arc Flash Hazard Warning Labels: Use warning labels to identify arc flash hazards for electrical equipment, such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized.
   a. Minimum Size: 5 by 7 inches.
   b. Legend: Include orange header that reads "WARNING", followed by the word message "Arc Flash and Shock Hazard; Appropriate PPE Required; Do not operate controls or open covers without appropriate personal protection equipment; Failure to comply may result in injury or death; Refer to NFPA 70E for minimum PPE requirements" or approved equivalent.

C. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
   Less than 250 Volts Between Phases
   Phase A - Black
   Phase B - Red
   Phase C - Blue
   Neutral - White
   Ground - Green
2. Identification for Communications Conductors and Cables: Comply with Section 27 13 43.
3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
   a. At each source and load connection.
   b. Within boxes when more than one circuit is present.
   c. Within equipment enclosures when conductors and cables enter or leave the enclosure.
4. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.
5. Use underground warning tape to identify direct buried cables.

D. Identification for Raceways:
1. Use underground warning tape to identify underground raceways.

E. Identification for Boxes:
1. Use voltage markers or color coded boxes to identify specified systems.
   a. Color-Coded Boxes: Field-painted in accordance with Section 09 91 23 and 09 91 13 per the following color code:
      1) Fire Alarm System: Red.
   b. For exposed boxes in public areas, do not color code.

2. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.
    a. For exposed boxes in public areas, provide identification on inside face of cover.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
1. Manufacturers:
    a. Brimar Industries, Inc: www.brimar.com/#sle.
    b. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
    c. Seton Identification Products: www.seton.com/#sle.
    d. Substitutions: See Section 01 25 00 - Substitution Procedures.
2. Materials:
    a. Indoor Clean, Dry Locations: Use plastic nameplates.
    b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
3. Plastic Nameplates: Two-layer or three-layer laminated electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
    a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
5. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Manufacturers:
    a. Brady Corporation: www.bradyid.com/#sle.
    b. Brother International Corporation: www.brother-usa.com/#sle.
    c. Panduit Corp: www.panduit.com/#sle.
    d. Substitutions: See Section 01 25 00 - Substitution Procedures.
2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

2.03 WIRE AND CABLE MARKERS

A. Manufacturers:
1. Brady Corporation: www.bradyid.com/#sle.
2. HellermannTyton: www.hellermanntyton.com/#sle.
3. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Markers for Conductors and Cables:
1. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.

C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

D. Legend: Power source and circuit number or other designation indicated.

E. Text: Use factory pre-printed or machine-printed text, all capitalized. Do not use hand written text.

F. Minimum Text Height: 1/8 inch.

G. Color: Black text on white background unless otherwise indicated.

2.04 UNDERGROUND WARNING TAPE

A. Manufacturers:
   1. Brady Corporation: www.bradyid.com/#sle.
   2. Brimar Industries, Inc: www.brimar.com/#sle.
   3. Seton Identification Products: www.seton.com/#sle.
   4. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Materials: Use non-detectable or foil backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
   1. Exception: Use foil-backed detectable type tape where required by serving utility or where directed by Owner.

C. Non-detectable Type Tape: 3 inches wide, with minimum thickness of 4 mil.

D. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection.

E. Legend: Type of service, continuously repeated over full length of tape.

F. Color:
   1. Tape for Buried Power Lines: Black text on red background.
   2. Tape for Buried Communication, Alarm, and Signal Lines: Black text on orange background.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
   1. Surface-Mounted Equipment: Enclosure front.
   2. Flush-Mounted Equipment: Inside of equipment door or enclosure front.
   3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
   4. Elevated Equipment: Legible from the floor or working platform.
   5. Branch Devices: Adjacent to device.
   6. Interior Components: Legible from the point of access.
   7. Conduits: Legible from the floor.
   8. Boxes: Outside face of cover.
   9. Conductors and Cables: Legible from the point of access.
   10. Devices: Outside face of cover.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws, rivets, self-adhesive backing, or epoxy cement and to interior surfaces using self-adhesive backing or epoxy cement.
   1. Do not use adhesives on exterior surfaces except where substrate cannot be penetrated.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Install underground warning tape above buried lines with one tape per trench at 6 inch(es) below finished grade. For trenches over 18 inches wide, install additional marker tape such that they are not over 10 inches apart (edge to edge) over the entire width of the trench.

G. Secure rigid signs using stainless steel screws.

H. Mark all handwritten text, where permitted, to be neat and legible.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

SECTION 26 05 83
WIRING CONNECTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.

B. Section 26 05 34 - Conduit for Electrical Systems.

C. Section 26 05 37 - Boxes for Electrical Systems.

D. Section 26 27 26 - Wiring Devices.

E. Section 26 28 18 - Enclosed Switches.

1.03 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
   2. Determine connection locations and requirements.
   3. Conduit, wire and circuit breaker sizes for mechanical equipment and equipment furnished under other Divisions are based on the equipment ratings of one manufacturer. The equipment actually furnished may have different electrical characteristics. Conduit, wire, and circuit breakers shall not be ordered or installed until exact electrical requirements are obtained. Responsibility for this coordination shall rest with the Contractor.
   4. Verify special purpose outlet NEMA configuration and ampere rating with equipment supplier prior to ordering devices and coverplates.

B. Sequencing:
   1. Install rough-in of electrical connections before installation of equipment is required.
   2. Make electrical connections before required start-up of equipment.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Products: Listed, classified, and labeled as suitable for the purpose intended.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   1. Colors: Comply with NEMA WD 1.
   2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
   3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

B. Enclosed Switches: As specified in Section 26 28 18.

C. Wiring Devices: As specified in Section 26 27 26.

D. Flexible Conduit: As specified in Section 26 05 34.

E. Wire and Cable: As specified in Section 26 05 19.

F. Boxes: As specified in Section 26 05 37.

2.02 EQUIPMENT CONNECTIONS

A. As indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Provide receptacle outlet to accommodate connection with attachment plug.

E. Provide cord and cap where field-supplied attachment plug is required.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

SECTION 26 09 43
DIGITAL NETWORK LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.01 SUMMARY

A. Installed system shall be comprised of stand-alone and networked control devices as indicated. System control devices shall include, but are not limited to:
   1. Digital Room Controllers.
   2. Fixture Control Modules
   3. Network Accessories
   4. Wall Stations.
   5. Network Modules.
   6. Conductors and Cabling

1.02 SYSTEM DESCRIPTION

A. The contractor shall provide and install NX Lighting Controls System as shown on plans and specified herein. NX Lighting Controls System shall be designed and configured to send and receive control, monitoring, operating and maintenance signals and commands wired and or wirelessly to and from networked enabled room controllers, fixture modules, and other controls devices.

1.03 SUBMITTALS

A. Prior to fabrication and shipment of lighting control components, manufacturer shall provide submittal documentation for approval.

B. Submittal documentation shall include:
   1. Bill of Material including a list of components to be supplied,
   2. Device specification sheets indicating device features, certifications, dimensions, construction specifications, electrical specifications, wiring diagrams, nomenclature, and related products,
   3. Component schedules: Indicating lighting control device types and locations
   4. Lighting panel schedules,
   5. Wiring diagrams,
   6. Control cable type and routing requirements,
   7. System riser drawings of sufficient detail to indicate relative placement of major system components and the required connections between each,
   8. Contractor Startup Request Form – to be completed prior to factory startup,
   9. Operating and maintenance instructions, manuals and/or videos.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualification: Manufacturer of lighting control devices with minimum five years record of satisfactory manufacturing and support of components comparable to basis of design system.
   1. Substitutions: See Section 01 25 00 Product Substitution Procedures.

B. Factory Assembly: All system components shall arrive at the job site completely pre-wired and ready for installation, requiring only the connection of lighting circuits and network terminations. All connections shall be made to clearly and permanently labeled termination points or by connectorized cable. Systems that required field assembly shall not be acceptable.

C. Component Testing: All system components and assemblies shall be individually tested prior to assembly. Once assembled, all finished products shall be tested for proper operation of all control functions per specifications prior to shipment.

1.05 SYSTEM COMPLIANCE

A. Compliance: Where indicated, individual components shall comply with the following requirements:

1. NEC Compliance: All system components shall comply with all applicable sections of the National Electrical Code (NEC) NFPA 70 as required.
2. NEMA Compliance: All system components shall comply with all applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.
3. UL Approval: All applicable equipment shall be tested to and listed under UL standard 508, UL standard 916 or UL924 and shall bare labels to indicate compliance. Lighting control relays shall be tested to UL standard 508 for both safety and endurance. Systems listed under ETL or other UL sections shall provide documentation proving compliance with UL standards as listed above.
4. FCC Emissions: All applicable equipment shall comply with FCC emissions standards specified in Part 15, sub-part j for commercial and residential applications and shall bear labels indicating compliance testing. Equipment that does not meet these standards shall not be acceptable.

1.06 WARRANTY

A. Manufacturer shall warrant the lighting control system components to be free from defects in material and workmanship for a period of five (5) years from the date of the certificate of building occupancy or proof of installation, whichever occurs first (“Warranty Period”). If the certificate of building occupancy is not available or there is no proof of installation, the Warranty Period shall begin with the Product ship date.

B. Manufacturer’s warranty shall include the repair or replacement product(s) with the same or a functionally equivalent product(s) or component part(s).

C. Manufacturer shall provide telephone technical support and remote diagnostics where applicable during normal business hours excluding manufacturer holidays.

D. Upon request, Manufacturer shall provide quotation for manufacturer service contract option(s) which include on-site technician visits for service and repair.

1.07 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances; Current Edition, Including All Revisions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design: NX Lighting Controls System manufactured by HLI Solutions, a division of Current, Greenville SC.

2.02 SYSTEM ARCHITECTURE

A. System shall consist of wired and/or wireless, distributed intelligent lighting control devices consisting of but not limited to control modules with ON/OFF, and dimming capabilities, and system input devices.

B. System shall provide for automatic self-configuration of system devices. Self-configuration shall be accomplished by the devices themselves and provide for control of lighting prior to system custom configuration and programming. Systems that require configuration prior to use shall be considered unacceptable.

C. To implement lighting control strategies, the system architecture shall facilitate the association of system input devices to control modules. The system shall use the Area/Zone/Group assignment strategy. The system shall support up to 128 Areas. Each area shall consist of up to 128 Zones and each zone shall consist of up to 16 Groups. Each device may be programmed to participate in one Area and Zone however may belong to one or more of the available 16 Groups within a Zone.

D. System shall include time-of-day and astronomical clock scheduling. Each Area/Zone shall support up to 99 scheduled events for use in developing time-of-day or astronomical clock sunrise/sunset automated schedules. Each schedule shall have the ability to turn a group ON or OFF or activate a preset lighting scene at a scheduled time. Schedules shall be day-of-week selectable and may be programmed to activate on any combination of days of the week (Sunday through Saturday) or to activate on a specific date/holiday.

E. System shall support blink alerts. Relay outputs within the control modules shall be programmable to blink prior to being turned OFF. Blink alert duration time shall be adjustable. Control modules programmed for the blink alert function shall blink the controlled lighting prior to turning OFF to warn occupants of the upcoming OFF event. If an ON command is received during the blink alert time, relay output will be overridden and left ON for the override time. Override time shall be adjustable.

F. System customization and programming shall be performed from a mobile App and/or web-based configuration and system management tools.

G. System shall have an intuitive and easy to use Graphical User Interface (GUI) to configure, control, monitor and schedule individual devices or groups of devices.

H. System shall remain fully functional during the programming process. Lighting control systems that must be taken “OFFLINE” for programming are not acceptable. All programming changes shall take effect immediately as they are programmed.

I. System shall be capable of being accessed from a local network or remotely using any standard Internet browser. System shall not require any special client-side software. Systems which utilize special client-side software shall not be acceptable.

J. Systems devices shall be capable of communication with each over one or all of the below methods.
   1. RS485 multi drop serial network
   2. Wireless mesh network
   3. Ethernet TCIP network

K. Wired – RS485/Ethernet
   1. System shall provide an Ethernet communication backbone (NX Network) for the connection of control Zones.
   2. System shall utilize the RS485 standard for connection of and communications between Zone Devices.
   3. System shall utilize the RS485 standard for connection of and communications between SmartPORT™ devices (e.g., Sensors, Switches and Accessories) connected within a NX Zone.

L. Wireless – Coordinator-less, Self-Organizing/Self-Healing Mesh
   1. System shall have a wireless architecture that utilizes wireless mesh radio technology to create a peer-to-peer, self-organizing and self-healing mesh network infrastructure.
   2. System shall have no single point of failure. A master controller/coordinator or master node shall not be required for proper system operation. All nodes shall be capable of communicating with each other without the need of these types of single point of failure devices. Systems which utilize a master controller/coordinator shall not be acceptable.
   3. System shall be self-organizing. The mesh network of devices shall self-organize automatically without the need to manually set device addresses via dials, DIP switches or other means.
   4. System shall be self-healing. System devices within the mesh network shall automatically reroute messages around a failed device to ensure message delivery.
   5. System architecture shall facilitate data transmission between wireless devices over the 2.4GHz ISM radio frequency (RF) band with a supported RF range of 100ft between wireless devices indoors and 300ft outdoors.

6. System shall use a wireless mesh radio communication protocol to transmit/receive and negotiate messaging among wireless devices.
7. System shall utilize spread spectrum frequency hopping to facilitate robust communication and prevent the unauthorized interception of messages over the air and to comply with FCC requirements.
8. System shall provide the ability to secure messages. When implemented, each device shall use the strong and secure AES-128 (Advanced Encryption Standard) security cipher to encrypt and decrypt messages. System shall also use the secure HTTPS/SSL protocol when users access the system using their Internet browser.

M. System devices shall be capable of having their firmware updated or upgraded over the air through the wireless mesh network.

2.03 DIGITAL ROOM CONTROLLERS

A. NX Room Controllers:
1. Basis of Design Product: NX Lighting Controls System, NX Room Controllers.
2. As indicated and where shown on the plans, install NXRC Series Room Controller(s) to control the quantity of lighting and plug loads required.
3. NX Room Controller(s) shall integrate the functionality of connected control components including wall switch stations, occupancy sensors and daylight sensors to provide the required sequence of operation for the space.
4. NX Room Controller(s) and associated room control components shall operate in a totally stand-alone mode and not require the use of a network, software, computer, or server for local control functions.
5. NX Room Controller(s) shall have an embedded Time Clock and be capable of storing and running up to 99 local schedules. Schedules shall run autonomously without the need of any coordinator, gateway, or master contr
6. Construction:
   a. NX Room Controller housing shall be constructed of GSM UL rated 94 HB plastic approved for use in a return air plenum.
   b. The housing shall include an integral 1/2" chase nipple for external mounting to standard junction box knockout.
   c. Two RJ45 FX Port connectors shall be accessible on the side of the enclosure of a Zone segment to allow for an expanded number of Zone segment devices (e.g., Room Controllers, In-Fixture Modules, and Digital Sensors). Up to 32 controllers and devices can be daisy-chained together.
   d. Two RJ45 SmartPORT™ connectors shall be accessible on the side of the enclosure for the connection of NX room level devices.
   e. Two recessed push buttons and associated LED indicators shall be accessible on the top of the enclosure to provide override, status, setup, and testing functions.
7. Electrical:
   a. NX Room Controller(s) shall have a single power feed and shall be capable of operation at voltages between 120/277/347 volts AC, 50/60 Hz.
   b. One or two output relays (model specific) shall provide the following load types and ampacity (per relay):
      1) 20A, Tungsten.
      2) 20A, Magnetic Ballast.
      3) 16A, Electronic Ballast.
      4) 1 H.P Motor @ 120V, 3/4 H.P. @ 277V; 1/2 H. P. @ 347V.
   c. Where indicated provide one or two independent 0-10 volt dimming channels (model specific) for full range dimming control of fixtures equipped with compatible dimmable ballast or driver.
   d. Each dimming output shall have a current sinking capacity of at least 30 mA.
   e. NX Room Controller(s) shall be capable of supplying 250 mA of Class 2 auxiliary DC power for use by wall switch stations, occupancy sensors, and daylight sensors

connected to the room controller's two RJ45 SmartPORT™ connectors.

f. NX Room Controller(s) shall be equipped with power monitoring circuitry capable of measuring and reporting the total connected load for each room controller.

8. Functional:
   a. Provide an integral pushbutton and LED indicator for each load for status and to allow operation of the relays and dimmers for testing and verification without requiring other control devices to be connected.
   b. NX Room Controller(s) shall have a default operation providing an automatic logical sequence of operation for each load as the room control devices are plugged into the SmartPORT™ connectors.
   c. Default operation for occupancy sensors shall be automatic on, automatic off for all loads.
   d. Upon connection of a switch, the operation shall automatically change to manual on, automatic off (vacancy) mode for all loads.
   e. Provide capability to convert each load independently to automatic on or vacancy mode using only the integral push buttons and LED indicators on the room controller.
   f. When in vacancy mode, provide a 30 second grace period after an off during which automatic on shall be temporarily enabled.
   g. It shall be possible to connect up to thirty-two (32) room controllers together on the FX Ports using Cat5 patch cables to provide configurations up to 64 switched and dimmed loads operating as a single zone.
   h. Provide the following set up and configuration functions without the need for additional devices or software:
      1) Assign/reassign relays for control by wall switch station buttons.
      2) Configure relays for occupancy or vacancy operation.
      3) Assign/reassign dimmers to raise/lower switches.
      4) Assign dimming channels for response to daylight sensor control.
      5) Auto calibrate default daylight sensor sequence of operation.
      6) Save preset scenes.
9. NX Room Controller(s) shall support the following specialty modes:
   a. SpectraSync™ CCT Control.
      1) Dimmer channels can be set individually to control CCT via 0-10V.
      2) Scheduling can be implemented to mimic the natural transition of light throughout the course of the day.
      3) Room-based solutions can be implemented to allow occupants to tune color to task.
   b. SpectraClean™:
      1) Ability to control SpectraClean™ enabled fixtures with three different modes for varying applications:
         (a) Constant On.
         (b) Scheduled.
         (c) Programmed Dosage.

2.04 FIXTURE MODULES

A. NX In-Fixture Modules
   1. Basis of Design Product: NX Lighting Controls System, NX In-Fixture Modules.
   2. As indicated in the specifications and as shown on the plans, install NXFM series Fixture Control Module enabled fixture(s).
   3. NX In-Fixture Modules shall be designed to install inside the fixture they control.
   4. NX In-Fixture Modules shall consist of a completely distributed intelligent lighting controller capable of functioning completely independently including time based and astronomical scheduling of On/Off and preset events without the need of any coordinator, gateway or master controller. Sensors and switches as well as other NX In- Fixture enabled fixtures shall be capable of being connected directly to the NX In-Fixture Module

to create a fully functional lighting control system.

5. NX In-Fixture Module shall be provided with one SPST relay. Relay shall be supplied with “Zero Cross Switching” control to limit the effects of inrush on the relay contacts.
6. NX In-Fixture Module shall be compatible with incandescent, magnetic, and electronic lighting loads including LED drivers. NX In-Fixture Module shall include zero arc point switching circuitry and have the following max load ratings:
7. Construction:
    a. Housing: GSM UL Rated 94 HB Plastic
    b. Mounting: Mounts inside fixture
8. Electrical:
    a. Line Voltage Versions:
        1) Input: Universal 120-347VAC, 50-60Hz
        2) Output: One or two relay outputs (model specific) shall provide for the following load types and ampacity (per relay):
            (a) 10A, 120VAC only Incandescent
            (b) 10A, 120-347VAC, Magnetic Ballast
            (c) 5A, 120-277VAC, Electronic Ballast
            (d) 3A, 347VAC, Electronic Ballast
        3) Surge Withstand: 2000V
        4) Peak Inrush: 160A for 2 ms Max
    b. Low Voltage Versions:
        1) Input: 12-24VDC
    c. NX In-Fixture Modules shall be provided with two 0-10VDC control interfaces for full range dimming control of dimming ballasts and LED drivers. Interface shall be designed to continuously sink 30mA of current.
    d. NX In-Fixture Module 0-10VDC control interfaces shall be configurable for 0-10VDC dimming, dim to off or color temperature control.
9. Functional:
    a. NX In-Fixture Modules shall be designed to self-configure, automatically to meet energy code requirements as NX sensors and other NX devices are connected.
    b. NX In-Fixture Module shall be designed such that self-configuration takes place automatically without user intervention or commissioning of any kind.
    c. NX In-Fixture Modules shall be rated and tested for an operating temperature range of -40° to 185°F -40° to 85°C.
    d. NX In-Fixture Module shall be equipped with a Real Time Clock and integral backup for schedule information. Each module shall support up to 99 schedules. Schedules shall be loaded to the module via the network or locally using the NX Lighting Controls App. Once loaded, schedules shall run autonomously without the need of any coordinator, gateway, or master controller.
    e. NX In-Fixture Module shall be capable of having its device firmware updated wirelessly over the air when connected to a NX sensor of via the NX SmartPORT.
    f. NX In-Fixture Modules shall be supplied with one momentary pushbutton with LED for manual control and testing. Through the use of this switch, it shall be possible to test the On/Off and dimming functionality of the NX In-Fixture module or completely reset the NX In-Fixture Module to factory defaults without the need to connect any other device or testing equipment. NX In-Fixture Module shall include non-volatile memory for retaining device settings during power outages.
    g. NX In-Fixture Module shall include non-volatile memory for retaining device settings during power outages.
10. NX In-Fixture Module shall be UL Listed to UL916 and Certified to CAN/CSA C22.2 NO 205-M1983.
11. NX In-Fixture Module shall be FCC certified.

2.05 WALL STATIONS

A. NX Smart Switches (Wired):
   1. Basis of Design Product: NX Lighting Controls System, NXSW Series Smart Switches (Wired).
   2. NX Smart Switches (Wired) shall be of the programmable type using standard Cat5 cabling for connection to system SmartPORT™.
   3. NX Smart Switches (Wired) shall have one, two, three, four, five, six, or eight buttons and provide lighting control functions as called out and shown on the plans. A key switch version shall also be available.
   4. NX Smart Switches (Wired) shall be available with the following specialty versions:
      a. OO: On/Off.
      b. ORLO: On/Raise/Lower/Off.
      c. TL: Raise/Lower.
      d. TO: Timed-On.
      e. SS: Scene.
   5. Construction:
      a. Housing: Rugged, high impact, injection molded plastic.
      b. Mounting: Switches shall be capable of being mounted to single-gang and multi-gang wall boxes and shall be compatible with standard decorator style wall plates.
   6. Electrical:
      a. Class 2 Low Voltage 24 VDC.
      b. Connection via two (2) RJ-45 SmartPORTs™ to allow for daisy chain connection of up to eight switches to each SmartPORT™.
   7. NX Smart Switches (Wires) shall be available in White, Ivory, Light Almond, Gray, Black, and Red.

2.06 NETWORK MODULES

A. NX Network Radio Module.
   1. Basis of Design Product: NX Lighting Controls System: NXRM2 Series Radio Module.
   2. NX Network Radio Module shall allow a luminaire equipped with the NXFM In-Fixture Module to be promoted wirelessly from standalone operation to full network participation.
   3. NX Network Radio Module shall plug into the SmartPORT™ connector on the NXFM In-Fixture Module and is mounted through a 1.25" aperture in the luminaire housing.
   4. NX Network Radio Module shall feature a low-profile housing for minimal visual impact.
   5. NX Network Radio Module shall feature an O-ring gasket to provide watertight seal to luminaire housing.
   6. NX Network Radio Module shall have an integrated and compact PCB F antenna and shall not require an external antenna.
   7. NX Network Radio Module shall integrate seamlessly into the NX Network.
   8. NX Network Module shall have an RF frequency of 2.4GHz.
   9. NX Network Radio Module shall include Bluetooth and provide connection to the NX Lighting Controls App.

2.07 NETWORK ACCESSORIES

A. NX Bluetooth® Radio Bridge with Real Time Clock
   1. Basis of Design Product: NX Lighting Controls System, NXBTI Series Bluetooth Radio Controller.
   2. NX Bluetooth Radio Bridge with Real Time Clock shall provide a wireless communication bridge for communications via iOS® or Android™ smart device apps.
   3. NX Bluetooth Radio Bridge with Real Time Clock shall connect to and be powered by an NX SmartPORT™.
   4. NX Bluetooth Radio Bridge with Real Time Clock shall use Bluetooth technology allowing the radio to easily pair with a smart phone or tablet.

5. NX Bluetooth Radio Bridge with Real Time Clock shall communicate with the NX system for setup and control from a smart device.
6. NX Bluetooth Radio Bridge with Real Time Clock shall feature a real time clock and allow schedules to be downloaded and run in stand-alone NX Room Controller applications without a network.
7. NX Bluetooth Radio Bridge with Real Time Clock shall provide password protections for user access preventing unauthorized Bluetooth connection of a smart device.
8. NX Bluetooth Radio Bridge with Real Time Clock shall use Bluetooth Version 4.1.
9. NX Bluetooth Radio Bridge with Real Time Clock shall feature an LED status indicator for successful connections.
10. NX Bluetooth Radio Bridge with Real Time Clock shall have a RJ45 plug-in connection to NX SmartPORT.
11. NX Bluetooth Radio Bridge with Real Time Clock shall be a low voltage 24VDC device.
12. NX Bluetooth Radio Bridge with Real Time Clock shall be rated for return air plenum

B. NX Lighting Controls App
1. NX Lighting Controls App shall provide Bluetooth® wireless setup and configuration of NX system devices and luminaires equipped with an NX In-Fixture Module and smart sensor.
2. NX Lighting Controls App shall be available in Android and iOS versions for free download from Google Play™ or Apple® App Store.
3. NX Lighting Controls App shall connect to NX devices via NXBTR/NXBTC modules, NXSMP/NXSMP2 sensors and radio modules via Bluetooth BLE.
4. NX Lighting Controls App shall enable easy setup and configuration of NX room devices and NX panels.
5. NX Lighting Controls App shall enable users to create custom schedules and presets.
6. NX Lighting Controls App shall be able to configure SpectraSync™ or SpectraClean™ enabled luminaires.
7. NX Lighting Controls App shall globally discover wireless enabled luminaires and devices.
8. NX Lighting Controls App shall include the IntelliSCOPE™ visual diagnostic tool for real-time calibration and testing of NX digital smart sensors.

2.08 CONDUCTORS AND CABLING

A. Power Supply Side of Remote-Control Power Sources: Comply with network manufacturer's requirements and requirements of Division 26 Section "Low-Voltage Electrical Power Conductors."

PART 3 EXECUTION

3.01 EXAMINATION

A. Prior to installation, contractor shall examine work area to verify measurements, all wire type and routing requirements, and that commencing installation complies with manufacturer's requirements.

B. Where variations from the general specifications or drawings exist, the contractor shall request a clarification prior to rough in or installation

3.02 INSTALLATION

A. Lighting controls shall be installed in accordance with manufacturer’s instructions, guidelines and submittal documents provided by the lighting control manufacturer.

B. Lighting control system components shall only be installed in spaces that meet the following environmental conditions:
1. Temperature: 32 – 104 degrees Fahrenheit (0-40 deg C).
2. Relative Humidity: 10 – 90 percent, noncondensing.

C. All stored and installed lighting control system components shall be adequately protected from dust and dirt.

3.03 SYSTEM STARTUP

A. The system manufacturer shall provide a factory authorized field engineer to the project site after installation has been completed and prior to system energization for the purpose of testing and adjustment of the system.

B. Factory field engineer shall test and verify all system functions and ensure proper operation of the system components in accordance with the specifications and on-site conditions. The installing contractor shall notify the system manufacturer in writing that the system is completely wired and ready to be energized and tested 2 weeks prior to scheduling a field engineer for start-up of the system. Should the field engineer arrive on the job site and find the installation incomplete, the installing contractor shall pay the cost of any future visits by the field engineer required to complete the system start-up.

C. Factory field engineer shall provide a written report of test and outcomes.

3.04 DEMONSTRATION AND TRAINING

A. Factory field engineer shall instruct owner's staff on how to adjust, operate and maintain lighting systems; and provide instruction using the system software.

1. Allow for up to 6 hours of on-site training on the use and maintenance of the lighting control system to be scheduled at the completion of startup and programming of the system.

3.05 TECHNICAL SUPPORT

A. Manufacturer shall provide reasonable access to factory direct telephone technical support during normal business hours.

END OF SECTION

SECTION 26 24 16
PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

C. Section 26 28 13 - Fuses: Fuses for fusible switches and spare fuse cabinets.

1.03 REFERENCE STANDARDS

A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e, with Amendments (2022).

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.

D. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 1000 Volts or Less; 2023.

E. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

H. UL 869A - Reference Standard for Service Equipment; Current Edition, Including All Revisions.

I. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

J. UL 1053 - Ground-Fault Sensing and Relaying Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
   4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for overcurrent protective devices, and other installed components and accessories.

C. Field Quality Control Test Reports.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Project Record Documents: Record actual installed locations of circuit breakers and actual installed circuiting arrangements.

F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store circuit breakers in accordance with manufacturer's instructions and NECA 407.

B. Store in a clean, dry space. Maintain factory wrapping to protect units from dirt, water, construction debris, and traffic.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Match Existing: Siemens Industry, Inc: www.usa.siemens.com/#sle.

B. Substitutions: See Section 01 25 00 - Substitution Procedures.

C. Source Limitations: Provide components produced by same manufacturer as other electrical distribution equipment used for project and obtained from a single supplier.

2.02 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:
   1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
   2. Interrupting Capacity:
      a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
         1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
      b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
   3. Conductor Terminations:
      a. Provide mechanical lugs for circuit breaker frame sizes less than 400 amperes.
      b. Provide compression lugs for circuit breaker frame sizes 400 amperes and above.
      c. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors of full breaker ampacity rating.
   4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
      a. Provide field-adjustable magnetic instantaneous trip setting for circuit breaker frame sizes 225 amperes and larger.
      b. Provide interchangeable trip units where indicated.

5. For air conditioning equipment branch circuits provide circuit breakers UL listed as Type HACR.
6. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
7. Provide the following circuit breaker types where indicated:
   a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
   b. Ground Fault Equipment Protection Circuit Breakers: Designed to trip at 30 mA for protection of equipment.
8. Provide listed switching duty rated circuit breakers with SWD marking for all branch circuits serving lighting.
9. Do not use tandem circuit breakers.
10. Do not use handle ties in lieu of multi-pole circuit breakers.
11. Provide the following features and accessories where indicated or where required to complete installation:
    a. Shunt Trip: Provide coil voltage as required for connection to indicated trip actuator.
    b. Handle Pad-Lock Provision: For locking circuit breaker handle in OFF position.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that the ratings and configurations of the components are consistent with the indicated requirements.

B. Verify that mounting surfaces are ready to receive panelboards.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship).

B. Install products in accordance with manufacturer's instructions.

C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.

D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

E. Provide required support and attachment in accordance with Section 26 05 29.

F. Provide grounding and bonding in accordance with Section 26 05 26.
   1. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on isolated/insulated ground bus.
   2. Terminate branch circuit isolated grounding conductors on isolated/insulated ground bus only. Do not terminate on solidly bonded equipment ground bus.

G. Install all field-installed branch devices, components, and accessories.

H. Multi-Wire Branch Circuits: Group grounded and ungrounded conductors together in the panelboard as required by NFPA 70.

I. Set field-adjustable circuit breaker tripping function settings as required.

J. Set field-adjustable ground fault protection pickup and time delay settings as required.

K. Provide filler plates to cover unused spaces in panelboards.

L. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
   1. Emergency and night lighting circuits.
   2. Fire detection and alarm circuits.
   3. Communications equipment circuits.
   4. Intrusion detection and access control system circuits.
   5. Video surveillance system circuits.

M. Identify panelboards in accordance with Section 26 05 53.
   1. Provide updated computer generated circuit directory for each lighting and appliance panelboard clearly and specifically indicating the loads served. Identify spares and spaces.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Perform inspection, testing, and adjusting in accordance with Section 01 40 00.

C. Inspect and test in accordance with NETA ATS, except Section 4.

D. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than 800 amperes. Tests listed as optional are not required.
   1. Perform insulation-resistance tests on all control wiring with respect to ground.
   2. Test functions of the trip unit by means of secondary injection.

E. Ground Fault Protection Systems: Test in accordance with manufacturer's instructions as required by NFPA 70.
   1. Perform inspections and tests listed in NETA ATS, Section 7.14. The insulation-resistance test on control wiring listed as optional is not required.

F. Test GFCI circuit breakers to verify proper operation.

G. Procure services of a qualified manufacturer's representative to observe installation and assist in inspection, testing, and adjusting. Include manufacturer's reports with field quality control submittals.

H. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

B. Adjust alignment of panelboard fronts.

C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.05 CLEANING

A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

C. Wall plates.

1.02 RELATED REQUIREMENTS

A. Section 26 05 37 - Boxes for Electrical Systems.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

C. Section 26 05 83 - Wiring Connections: Cords and plugs for equipment.

1.03 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2014h (Validated 2022).

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification); 2017g (Validated 2023).

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.

I. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

K. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
   2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
   3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
   4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
   5. Coordinate the core drilling of holes for poke-through assemblies with the work covered under other sections.
   6. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

B. Sequencing:
   1. Do not install wiring devices until final surface finishes and painting are complete.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

C. Samples: One for each type and color of device and wall plate specified.

D. Field Quality Control Test Reports.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Operation and Maintenance Data:
   1. GFCI Receptacles: Include information on status indicators.

G. Project Record Documents: Record actual installed locations of wiring devices.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Screwdrivers for Tamper-Resistant Screws: Two for each type of screw.
   3. Extra Keys for Locking Switches: Five of each type.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.01 WIRING DEVICE APPLICATIONS

A. Provide wiring devices suitable for intended use and with ratings adequate for load served.

B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.

C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.

D. Provide tamper resistant receptacles for receptacles installed in locations as identified in NEC 406.12
   1. Child care, preschool, and education facilities.
   2. Assembly occupancies.

E. Provide GFCI protection for receptacles installed within 6 feet of sinks.

F. Provide GFCI protection for receptacles serving electric drinking fountains.

G. Unless noted otherwise, do not use combination switch/receptacle devices.

2.02 ALL WIRING DEVICES

A. Provide products listed and classified by Underwriter Laboratories, Inc. as suitable for the purpose specified and indicated.

B. Source Limitations: Where possible, for each type of wiring device furnish products produced by a single manufacturer and obtained from a single supplier.

C. Finishes
   1. Provide wiring device finishes as described below unless otherwise indicated.

2. All Wiring Devices: Color as selected by the Architect with wall plate as specified in wall plates section.
3. Wiring Devices Installed in Finished Spaces: Color as selected by Architect with wall plate as specified in wall plates spection.
4. Wiring Devices Installed in Unfinished Spaces: Color as selected by Architect with wall plate as specified in wall plates section.
5. Wiring Devices Installed in Wet or Damp Locations: Color as selected by Architect with specified weatherproof cover.
6. Isolated Ground Convenience Receptacles: Orange with isolated ground triangle mark on device face.
7. Wiring Devices Connected to Emergency Power: Red with wall plate as specified for wiring devices connected to normal power, but engraved "Emergency".

2.03 WALL SWITCHES

A. Manufacturers:
1. Hubbell Incorporated: www.hubbell.com/#sle.
2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.
4. Cooper Wiring Devices: www.cooperwiringdevices.com.
5. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring with separate ground terminal screw.

C. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.
1. Products:
a. Hubbell 1221 Series.
b. Substitutions: See Section 01 25 00 - Substitution Procedures.

D. Pilot Light Wall Switches: Industrial specification grade, 20 A, 120/277 V with red illuminated standard toggle type switch actuator and maintained contacts; illuminated with load on; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.
1. Products:
a. Hubbell 1221 Series.
b. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.04 RECEPTACLES

A. Manufacturers:
1. Hubbell Incorporated: www.hubbell.com/#sle.
2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.
4. Cooper Wiring Devices: www.cooperwiringdevices.com.
5. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
2. NEMA configurations specified are according to NEMA WD 6.
3. Hospital Grade Receptacles: Listed as complying with UL 498 Supplement SD, with green dot hospital grade mark on device face.

C. Convenience Receptacles:
   1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R ; single or duplex as indicated on the drawings.
      a. Products:
         1) Hubbell 5362 (20A).
         2) Hubbell 5262 (15A).
         3) Substitutions: See Section 01 25 00 - Substitution Procedures.
   2. Weather Resistant Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R , listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.
      a. Products:
         1) Hubbell 5362WR (20A).
         2) Hubbell 5262WR (15A).
         3) Substitutions: See Section 01 25 00 - Substitution Procedures.
   3. Tamper Resistant Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R , listed and labeled as tamper resistant type; single or duplex as indicated on the drawings.
      a. Products:
         1) Hubbell BR20 Series (20A).
         2) Hubbell BR15 Series (15A).
         3) Substitutions: See Section 01 25 00 - Substitution Procedures.
   4. Tamper Resistant and Weather Resistant Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R , listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.
      a. Products:
         1) Hubbell BR20 Series (20A).
         2) Hubbell BR15 (15A).
         3) Substitutions: See Section 01 25 00 - Substitution Procedures.

D. GFCI Receptacles:
   1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
      a. Provide test and reset buttons of same color as device.
   2. Standard GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R , rectangular decorator style.
      a. Products:
         1) Hubbell GFR5362 Series (20A).
         2) Substitutions: See Section 01 25 00 - Substitution Procedures.
   3. Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R , rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.
      a. Products:
         1) Hubbell GFR5362 Series (20A).
         2) Hubbell GFR5262 Series (15A).
         3) Substitutions: See Section 01 25 00 - Substitution Procedures.
   4. Tamper Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R , rectangular decorator style, listed and labeled as tamper resistant type.

a. Products:
1) Hubbell GFTR20 Series (20A).
2) Hubbell GFTR15 Series (15A).
3) Substitutions: See Section 01 25 00 - Substitution Procedures.

5. Tamper Resistant and Weather Resistant GFCI Receptacles: Industrial specification grade, duplex,20A, 125V, NEMA 5-20R and/or 15A, 125V, NEMA-15R , rectangular decorator style, listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.
a. Products:
1) Hubbell GFTR20 Series (20A).
2) Hubbell GFTR15 Series (15A).
3) Substitutions: See Section 01 25 00 - Substitution Procedures.

2.05 WALL PLATES

A. Manufacturers:
1. Hubbell Incorporated: www.hubbell-wiring.com/#sle.
2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.
4. Substitutions: See Section 01 25 00 - Substitution Procedures.

B. Wall Plates: Comply with UL 514D.
1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
2. Size: Standard.
3. Screws: Metal with slotted heads finished to match wall plate finish.
4. Provide screwless wallplates with concealed mounting hardware where indicated.

C. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

D. Galvanized Steel Wall Plates (Only allowed in dedicated Mechanical and Electrical Rooms): Rounded corners and edges, with corrosion resistant screws.

E. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

D. Verify that final surface finishes are complete, including painting.

E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

B. Coordinate locations of outlet boxes provided under Section 26 05 37 as required for installation of wiring devices provided under this section.
   1. Mounting Heights: Unless otherwise indicated, as follows:
   2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
   3. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
   4. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
   5. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.

C. Install wiring devices in accordance with manufacturer's instructions.

D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.

F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.

G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.

H. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.

I. Where split-wired duplex receptacles are indicated, remove tabs connecting top and bottom receptacles.

J. Install wiring devices plumb and level with mounting yoke held rigidly in place.

K. Install wall switches with OFF position down.

L. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.

M. Do not share neutral conductor on branch circuits utilizing wall dimmers.

N. Install vertically mounted receptacles with grounding pole on bottom and horizontally mounted receptacles with grounding pole on right.

O. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

P. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

Q. Identify wiring devices in accordance with Section 26 05 53.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Perform field inspection, testing, and adjusting in accordance with Section 01 40 00.

C. Inspect each wiring device for damage and defects.

D. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.

E. Test each receptacle to verify operation and proper polarity.

F. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.

G. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.06 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 51 00
LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Luminaires.

B. Drivers.

C. Emergency power supply units.

D. LED modules.

1.02 RELATED REQUIREMENTS

A. Section 26 05 29 - Hangers and Supports for Electrical Systems.

B. Section 26 05 26-Grounding and Bonding for Electrical Systems.

C. Section 26 05 37 - Boxes for Electrical Systems.

D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. IES LM-63 - Approved Method: IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information; 2019.

B. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products; 2019.

C. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources; 2021.

D. IESNA RP-8 - Roadway Lighting; 2014.

E. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems; 2006.

F. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2000 (Reaffirmed 2006).

G. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.

H. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2023.

I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

J. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. UL 844 - Luminaires for Use in Hazardous (Classified) Locations; Current Edition, Including All Revisions.

L. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.

M. UL 1598 - Luminaires; Current Edition, Including All Revisions.

N. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts

installed under other sections or by others.

3. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
   2. Provide photometric calculations where luminaires are proposed for substitution upon request.

C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
   1. LED Luminaires:
      a. Include estimated useful life, calculated based on IES LM-80 test data.
      b. Include IES LM-79 test report upon request.
   2. Provide electronic files of photometric data certified by a National Voluntary Laboratory Accreditation Program (NVLAP) lab or independent testing agency in IES LM-63 standard format upon request.
   3. LED Modules: Include rated life, color temperature, color rendering index (CRI), and initial and mean lumen output.
   4. Emergency Power Supply Unit: Include list of compatible lamp configurations and associated lumen output.
   5. Air Handling Luminaires: Include air handling performance data.

D. Coefficients of Utilization by an approved testing laboratory.

E. LED Module and driver type for each fixture.

F. Group of fixtures with the same LED Module and driver type may reference a single set of submittal documents.

G. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide 5-year manufacturer warranty for LED modules, including drivers.

PART 2 PRODUCTS

2.01 LUMINAIRES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products that are listed and labeled as complying with UL 1598, where applicable.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Provide the complete system of lighting fixtures and LED Modules as shown on the drawings and specified herein. The requirements of all other sections of the specification are equally applicable to the work to be performed under this section.

E. The fixture catalog numbers listed on the drawing indicate manufacturer, fixture design, appearance, etc., desired. These fixtures shall be modified if necessary to comply with the specification herein. Lighting fixtures specified will be the basis for comparison in the consideration of fixtures of other manufacturers.

F. All fixture component parts shall be manufactured and/or assembled at the manufacturing plant for shipment in one or more packages. The shipment from the fixture manufacturer shall include integrally-mounted and/or remote-mounted drivers where drivers are required for the proper operation of the fixture lamps.

G. Recessed Luminaires:
   1. Ceiling Compatibility: Comply with NEMA LE 4.
   2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
   3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.

H. High Bay Luminaires: Provide safety chain or power hook unless otherwise indicated.

I. Fixtures - General:
   1. Finish shall be white baked enamel, unless otherwise specified with a minimum average reflectance of 85% on all exposed and light reflecting surfaces. Steel components shall be prepared for finishing with a 5-step zinc phosphating process.
   2. All surface mounted lighting fixtures shall have low density label.
   3. All recessed lighting fixtures installed in fire rated ceiling shall be provided with fire-rated protective covers.
   4. All fixtures mounted outdoors or in unheated spaces shall be capable of operating at 0 degrees F.

J. If fixtures specified herein are discontinued at the time the work is executed, provide suitable substitute fixtures, without additional cost, as directed by the engineer.

K. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. The Manufacturers required to inform the owner of new power requirements and / or lumen output values if new replacement components prior to shipping replacement parts.
   3. Color temperature shall be per the luminaire schedule. The color temperature shall not exceed a +/- tolerance of greater than 2 McAdam Ellipses. Over the life of the luminaire.
   4. Tested in accordance with IES LM-79 and IES LM-80.
   5. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

L. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

M. Electrical Characteristics: 120 volts, 60 Hz, unless otherwise specified.

N. Substitutions, unless Otherwise Indicated: See Section 01 25 00 - Substitution Procedures.

2.02 EMERGENCY POWER SUPPLY UNITS

A. Manufacturers:
   1. As recommended by light fixture manufacturer.

B. Description: Self-contained emergency power supply units suitable for use with indicated luminaires, complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.

C. Compatibility:
   1. Compatible with electronic, standard magnetic, energy saving, and dimming drivers.

D. Operation: Upon interruption of normal power source, solid-state control automatically switches connected lamp(s) to the emergency power supply for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.

E. Battery: Sealed maintenance-free high-temperature nickel cadmium unless otherwise indicated.

F. Diagnostics: Provide accessible and visible multi-chromatic combination test switch/indicator light to display charge, test, and diagnostic status and to manually activate emergency operation.

G. Self-Diagnostics: Provide units that self-monitor functionality and automatically perform testing required by NFPA 101 where indicated; provide indicator light(s) to report test and diagnostic status and field selectable audible alert.

H. Operating Temperature: From 32 degrees F to 122 degrees F unless otherwise indicated or required for the installed location.
   1. Where located in exterior mounted light fixtures, drivers shall have a min. operation temperature of 0 degrees F.

I. Accessories:
   1. Provide compatible accessory remote combination test switch/indicator light where indicated.

2.03 LED MODULES

A. Manufacturers:
   1. As recommended by light fixture manufacturer..
   2. Substitutions: See Section 01 25 00 - Substitution Procedures.
   3. Manufacturer Limitations: Where possible, provide lamps produced by a single manufacturer.

B. LED Modules:
   1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
   2. Verify compatibility of specified LED's with luminaires to be installed. Where LED's are not specified, provide LED's per luminaire manufacturer's recommendations.
   3. Minimum Efficiency: Provide LED's complying with all current applicable federal and state LED efficiency standards.
   4. Color Temperature Consistency: Unless otherwise indicated, for each type of LED furnish products which are consistent in perceived color temperature. Replace fixtures that are determined by the Architect to be inconsistent in perceived color temperature.
   5. Components: UL 8750 recognized or listed as applicable.
   6. Tested in accordance with IES LM-79 and IES LM-80.
   7. LED Estimated Useful Life: Minimum of 50,000 hours at 70% lumen maintenance, calculated based on IES LM-80 test data.
   8. Light Lumen output as indicated on the drawings.

9. Interior lighting shall have a CRI of 80 or greater if not otherwise indicated on the drawings.
10. Exterior lighting shall have a CRI of 70 or greater if not otherwise indicated on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 05 37 as required for installation of luminaires provided under this section.

B. Install products in accordance with manufacturer's instructions.

C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).

D. Provide required support and attachment in accordance with Section 26 05 29.

E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

F. Square and rectangular fixtures shall be mounted with sides parallel to building lines and parallel with ceiling lines.

G. Properly support and align fixtures and provide all necessary steel shapes for support of the fixtures. Recessed fixtures shall be supported at opposite corners by steel wire connected to building structure per IBC requirements. Coordinate complete fixture installation with the facility construction.

H. Surface Mounted Fixtures: Where fixtures are indicated for installation on low density ceiling material, mount on ceiling spacers as recommended by manufacturer unless UL approved for mounting directly to ceiling material.

I. Install accessories furnished with each luminaire.

J. Bond products and metal accessories to branch circuit equipment grounding conductor.

K. Emergency Power Supply Units:
1. For field-installed units, install inside luminaire unless otherwise indicated. Where installation inside luminaire is not possible, install in remote location not exceeding manufacturer's recommended maximum conductor length to luminaire.
2. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal driver(s) in luminaire. Bypass local switches, contactors, or other lighting controls.
3. Install lock-on device on branch circuit breaker serving units.

L. Remote Drivers: Install in accessible location as indicated or as required to complete installation, using conductors per manufacturer's recommendations not exceeding manufacturer's recommended maximum conductor length to luminaire.

M. Identify luminaires connected to emergency power system in accordance with Section 26 05 53.

N. Operate light fixtures at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace light fixture components that fail prematurely.

O. Verify all ceiling systems and coordinate fixture type and accessories prior to ordering fixtures.

P. Install light fixtures as recommended by the manufacturer or as necessary to provide exact horizontal alignment, preventing horizontal or vertical deflection, or angular jointing of fixtures installed in continuous rows.

Q. All lighting fixtures shall be furnished complete with LED Module and driver and all accessories necessary to provide a complete operable fixture.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect each product for damage and defects.

C. Operate each luminaire after installation and connection to verify proper operation.

D. Test emergency power supply units to verify proper operation upon loss of normal power supply.

E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy drivers as determined by Architect.

3.05 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

3.06 CLEANING

A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals and Procedures, for closeout submittals.

B. See Section 01 79 00 - Demonstration and Training, for additional requirements.

C. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.

D. Just prior to Substantial Completion, replace defective LED Module(s) and driver(s).

3.08 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 27 05 28
PATHWAYS FOR LOW VOLTAGE SYSTEMS CABLING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Low voltage cabling systems pathways.

B. Telecommunications & cable TV service entrance to building(s).

C. Communications pathways.

D. Pathway Identification.

E. Pathways inside building(s).

F. Pathways connecting building(s).

G. Enclosures, backboards, and outlet boxes.

H. Grounding and bonding the low voltage cabling pathway system.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

C. Section 26 05 34 - Conduit.

D. Section 26 05 53 - Identification for Electrical Systems.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 23 00 - Alternates, for product alternatives affecting this section.

1.04 REFERENCE STANDARDS

A. EIA/ECA-310 - Cabinets, Racks, Panels, and Associated Equipment; Consumer Electronics Association ; current version, with addenda.

B. TIA-568.1 - Commercial Building Telecommunications Cabling Standard; Telecommunications Industry Association ; current version, with addenda..

C. TIA-568.2 - Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted Pair Cabling Components; Telecommunications Industry Association ; current version, with addenda.

D. TIA-569 - Telecommunications Pathways and Spaces; current version, with addenda.

E. TIA-606 - Administration Standard for Telecommunications Infrastructure, current version with addenda.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Keep stored products clean and dry.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals and Procedures, for additional warranty requirements.

B. Correct defective Work within a 1 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SYSTEM DESIGN

A. Provide a complete permanent system of cabling pathways for low-voltage system cabling including but not limited to: Voice and data communications, fire alarm, intrusion detection, access control, video surveillance, audio/visual, lighting controls, including conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlet boxes.

B. Drawings may indicate specific raceway requirements for some locations. The contractor is responsible for including the specific raceway requirements indicated in addition to those required of this and related specification sections.

C. Provide conduit as indicated by related system device and/or equipment specification section to facilitate cable installation and as follows:
   1. Where cable is not allowed by applicable code to be routed in accessible ceiling spaces or in free-air.
   2. Where cable is allowed by applicable code to be routed in accessible ceiling spaces or in free-air.
      a. From the Main Distribution Frame (MDF).
      b. From low voltage device outlet to an accessible ceiling space.
         1) For Voice and Data outlets:
            (a) Provide minimum 1 inch conduit forCAT 5E and CAT 6 cable, 1-1/4 inch conduit for CAT 6A cable, from outlet box to accessible ceiling. See drawings for additional requirements.
         2) For Audio/Visual outlets:
            (a) See drawings.
         3) For Access Control, Intrusion Detection & Video Surveillance outlets:
            (a) Provide minimum one 3/4 inch conduit from outlet box to accessible ceiling. See drawings for additional requirements.
         4) For Fire Alarm outlets:
            (a) Provide minimum one 3/4 inch conduit from outlet box to accessible ceiling. See drawings for additional requirements.
         5) All other low-voltage device outlets:
            (a) As indicated on the drawings.
   3. Where routing cable across inaccessible ceiling spaces longer than 10 feet:
      a. Provide sufficient quantity and sized conduit sleeves to not exceed 40% cable fill per conduit provided.

2.02 PATHWAYS

A. Conduit: As specified in Section 26 05 34.

B. Boxes: As specified in Section 26 05 37 and as specified herein.

2.03 IDENTIFICATION PRODUCTS

A. Comply with TIA-606.

B. Comply with Section 26 05 53.

2.04 ENCLOSURES/BACKBOARDS

A. Backboards: Interior grade ACX or better plywood without voids, 3/4 inch thick; UL-labeled fire-retardant.
   1. Panel Size: 48 inches wide by 96 inches high. Provide minimum of one panel or quantity as necessary to accomplish coverage shown on drawings.
   2. Do not paint over UL label.
   3. Provide ground bus bar and #6 AWG insulated CU ground conductor to service ground, as specified in Section 26 05 26.

2.05 DEVICE OUTLET BOXES

A. Unless otherwise specified in related device's system section; flush mount outlet box depth shall be as required to accommodate cable manufacturer's recommended minimum conductor bend radius.
   1. Size, Unless Otherwise Indicated: 4 inches square by 2-1/8 inches deep.
   2. Wall-Mounted Telephones: 4 inches high by 2 inches wide by 2-1/8 inches deep.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Firestopping: Seal openings around pathway penetrations through fie-related walls, partitions, floors, and ceilings in accordance with Section 07 84 00.

3.02 INSTALLATION OF PATHWAYS

A. Underground: Install conduit at least 24 inches below finish grade.

B. Install with minimum clearances per Section 26 05 34.

C. In addition to as specified in Section 26 05 34, provide pull string in all conduits where there is available conduit fill capacity for future cable installation.

3.03 INSTALLATION OF DEVICE OUTLET BOXES

A. Install per Section 26 05 37.

B. Mounting heights: Unless otherwise indicated, as follows:
   1. Voice and Data Outlets: 18 inches above finished floor.
   2. Voice and Data Outlets for Forward and Side-Reach Wall-Mounted: 45 inches above finished floor.

C. Orient outlet boxes for vertical installation of devices unless otherwise indicated.

END OF SECTION

SECTION 27 10 00
STRUCTURED CABLING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Communications pathways.

B. Copper cable and terminations.

C. Communications equipment room fittings.

D. Communications outlets.

E. Communications grounding and bonding.

F. Communications identification.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
   1. Includes intersystem bonding termination.
   2. Includes bonding jumpers for bonding of communications systems and electrical system grounding.

C. Section 26 05 37 - Boxes for Electrical Systems.

D. Section 26 05 53 - Identification for Electrical Systems: Identification products.

E. Section 26 27 26 - Wiring Devices.

F. Section 27 05 28 - Pathways for Low-Voltage Systems Cabling

G. Section 27 05 29 - Hangers and Supports for Communications Systems.

1.03 REFERENCE STANDARDS

A. ANSI - American National Standards Institute; Current Edition, Including All Revisions.

B. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition; 2019.

C. EIA/ECA-310 - Cabinets, Racks, Panels, and Associated Equipment; 2005e.

D. FM (AG) - FM Approval Guide; Current Edition.

E. ICEA S-90-661 - Category 3 and 5E Individually Unshielded Twisted Pairs, Indoor Cables (With or Without an Overall Shield) for Use in General Purpose and LAN Communication Wiring Systems; 2021.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. TIA-568 (SET) - Commercial Building Telecommunications Cabling Standard Set; 2023.

H. TIA-568.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards; 2018d, with Addenda (2020).

I. TIA-569 - Telecommunications Pathways and Spaces; 2019e, with Addendum (2022).

J. TIA-606 - Administration Standard for Telecommunications Infrastructure; 2021d.

K. TIA-607 - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises; 2019d, with Addendum (2021).

L. TIA/EIA-568-B.1 - Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements; Rev B, 2001; Addenda 1-7.; Current Edition, Including All Revisions.

M. UL (DIR) - Online Certifications Directory; Current Edition.

N. UL 444 - Communications Cables; Current Edition, Including All Revisions.

O. UL 1863 - Communications-Circuit Accessories; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.
   2. Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Arrange for Communications Service Provider to provide service.

C. Preinstallation Meeting: Convene one week prior to commencing work of this section to review service requirements and details with Communications Service Provider representative.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

C. Sustainable Design Documentation: Submit manufacturer's product data on cable and cable insulation showing compliance with specified lead content requirements.

D. Shop Drawings: Show compliance with requirements on diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, and grounding.

E. Evidence of qualifications for installer.

F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

G. Test Plan: Complete and detailed plan, with list of test equipment, procedures for inspection and testing, and intended test date; submit at least 60 days prior to intended test date.

H. Field Test Reports.

I. Project Record Documents: Prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
   1. Record actual locations of outlet boxes and distribution frames.
   2. Show as-installed color coding, pair assignment, polarization, and cross-connect layout.
   3. Identify distribution frames and equipment rooms by room number on drawings.

J. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of project record documents.

1.06 QUALITY ASSURANCE

A. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

B. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.

C. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:
   1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
   2. Supervisors and installers factory certified by manufacturers of products to be installed.
   3. Employing BICSI Registered Cabling Installation Technicians (RCIT) for supervision of all work.

D. Products: Listed, classified, and labeled as suitable for the purpose intended.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation. In addition, cable must be stored in a location protected from vandalism and weather. If cable is stored outside, it must be covered with opaque plastic or canvas with provision for ventilation to prevent condensation and for protection from weather. If air temperature at cable storage location will be below 40 degrees F, the cable to be moved to a heated (50 degrees F minimum) location.

B. Keep stored products clean and dry. If necessary, cable to be stored off site at the Contractor's expense.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals and Procedure, for additional warranty requirements.

B. The Contractor shall provide a system warranty covering the installed cabling system against defects in workmanship, components, and performance, and follow-on support after project completion.

C. The Contractor shall warrant the cabling system against defects in workmanship for a period of one year from the date of system acceptance. The warranty shall cover all labor and materials necessary to correct a failed portion of the system and to demonstrate performance within the original installation specifications after repairs are accomplished. This warranty shall be provided at no additional cost to the Owner.

D. The Contractor shall facilitate a minimum 20-year system performance warranty between the manufacturer and the Owner. An extended component warranty shall be provided which warrants functionality of all components used in the system for a minimum of 20 years from the date of acceptance. The performance warranty shall warrant the installed 250 MHz horizontal copper. Copper links shall be warranted against the link performance minimum expected results defined in ANSI/TIA/EIA-568-B.2-1 (latest draft). Fiber optic links shall be warranted against the link and segment performance minimum expected results defined in ANSI/TIA/EIA-568-B.1.

E. The Contractor shall furnish an hourly rate with the proposal submittal which shall be valid for a period of one year from the date of acceptance. This rate will be used when cabling support is required to affect moves, adds, and changes to the system (MACs). MACs shall not void the Contractor's nor manufacturer's warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. These specifications use a single manufacturer's name, model, or catalog number herein for the purpose of establishing a product set. An equivalent for the specified product set may be used upon approval by the architect or engineer of record.

B. Approved Manufacturers:
1. Leviton: www.leviton.com.
2. Panduit/General Cable: www.pangensolutions.com.
3. Commscope Systimax: www.commscope.com/systimax.
4. Hubbell/Draka Comteq: www.hubbell-premise.com; www.drakacomteq.us.

2.02 SYSTEM DESIGN

A. Provide a complete permanent system of cabling and pathways for voice and data communications, including conduits and wireways, pull wires, support structures, enclosures and cabinets, rough-in boxes, conduit sleeves, and terminators.

1. Comply with TIA/EIA-568 and TIA/EIA-569, latest editions.
2. Comply with TIA-570, latest edition.
3. Provide fixed cables and pathways that comply with NFPA 70 and ANSI/J-STD-607 and are UL listed.
4. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F at relative humidity of 0 to 95 percent, noncondensing.
5. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.
6. Capacity: As required to terminate all cables plus minimum 25 percent space space.

2.03 PATHWAYS

A. Conduit: See section 27 05 28 - Pathways for Low Voltage Systems Cabling.

2.04 COPPER CABLE AND TERMINATIONS

A. Copper Horizontal Cable:
   1. Description: 100 ohm, balanced twisted pair cable complying with TIA-568.2 and listed and labeled as complying with UL 444.
   2. Cable Type - Voice and Data: TIA-568.2 Category 6 UTP (unshielded twisted pair); 23 AWG.
   3. Cable Capacity: 4-pair.
   4. Cable Applications: Use listed NFPA 70 Type CMP plenum cable unless otherwise indicated.
   5. Cable Applications:
      a. Plenum Applications: Use listed NFPA 70 Type CMP plenum cable.
      b. Riser Applications: Use listed NFPA 70 Type CMR riser cable or Type CMP plenum cable.
      c. General Purpose Applications: Use listed NFPA 70 Type CM/CMG general purpose cable, Type CMR riser cable, or Type CMP plenum cable.
   6. Cable Jacket Color - Voice and Data Cable: Blue.
   7. Product(s):
      a. CommScope; SYSTIMAX Twisted Pair Cables; GigaSPEED XL Category 6 U/UTP Cable: www.commscope.com/#sle.
         1) Riser Rates: CommScope p/n 1071E BLU C6 4/23 U/UTP.
         2) Plenum Rating: CommScope p/n 1071E-UTG BLU C6 4/23 U/UTP.

B. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.

C. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.
   1. As specified under COMMUNICATIONS OUTLETS.

D. Copper Patch Cords:
   1. Description: Factory-fabricated 4-pair cable assemblies with 8-position modular connectors terminated at each end.
   2. Patch Cords for Patch Panels:
      a. Quantity: One for each pair of patch panel ports.
      b. Length: 7 feet.
   3. Product(s):
      a. CommScope; SYSTIMAX Category 6 U/UTP Patch Cords: www.commscope.com/#sle.

2.05 COMMUNICATIONS EQUIPMENT ROOM FITTINGS

A. Copper Cross-Connection Equipment:
   1. Use existing.

B. Backboards: Existing.

2.06 COMMUNICATIONS OUTLETS

A. Faceplates:
1. 4 port angled faceplate constructed of ABS molding compound. Each port shall be provided with an icon to indicate its function. Faceplate shall accommodate two labels and provide a clear polycarbonate cover for each. All unused port positions shall have a blank insert installed. Faceplate ports shall be populated left to right, top to bottom.
2. Color: White.
3. CAT 6.
4. Manufacturer: CommScope p/n M14AS-262.

B. Modular Jacks
1. All modular jacks shall be wired to the T568B wiring pattern. Modular jacks shall be constructed with a housing of polyphenylene oxide, 94V-0 rated. Modular jacks shall be terminated using a 110-style pc board connector (made of 94V-0 rated polycarbonate), color-coded for both T568A or T568B wiring. The 110 connector shall terminate 22-24 AWG solid conductors with a maximum insulation diameter of 0.5 inch. The modular jack contacts shall be plated with a minimum of 50 micro inches of gold in the contact area over a 50 micro inch minimum nickel underplate. Modular jacks shall be UL Listed.
2. CAT 6 Manufacturer:
   a. Color: CommScope p/n MGS400-BL.

C. Standard Configurations:
1. Unless otherwise noted, all locations shall be provided with 2 Category 6 UTP cables terminated on Category 6 modular RJ-45 jacks.
2. Wireless Access Point:
   a. Located at accessible ceilings: Provide 1 - Category 6A UTP cable terminated on Category 6A modular RJ-45 jacks.
   b. Located at inaccessible ceilings or shown on wall: Provide outlet junction box with 1 - Category 6A modular jack and faceplate capable of supporting up to two jacks.
3. Projector or Large Format Display (LFD) Outlet:
   a. 2 - Category 6 UTP cable terminated on Category 6 modular RJ-45 jacks. See drawings for outlet box information.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Comply with latest editions and addenda of TIA-568 (SET) (cabling), TIA-569 (pathways), TIA-607 (grounding and bonding), BICSI N1, NFPA 70, and SYSTEM DESIGN as specified in PART 2.

B. Comply with latest editions and addenda of TIA-570, TIA-607, NFPA 70, and SYSTEM DESIGN as specified in PART 2.

C. Comply with Communication Service Provider requirements.

D. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.

E. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

3.02 INSTALLATION OF EQUIPMENT AND CABLING

A. Cabling:
1. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
2. Do not over-cinch or crush cables.
3. Do not exceed manufacturer's recommended cable pull tension.

4. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.

B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:
   1. At Distribution Frames: 120 inches.
   2. At Outlets - Copper: 12 inches.

C. Copper Cabling:
   1. Category 5e and Above: Maintain cable geometry; do not untwist more than 1/2 inch from point of termination.
   2. For 4-pair cables in conduit, do not exceed 25 pounds pull tension.
   3. Use T568B wiring configuration.

D. Identification:
   1. Use wire and cable markers to identify cables at each end.
   2. Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.
   3. Use identification nameplate to identify cross-connection equipment, equipment racks, and cabinets.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Comply with inspection and testing requirements of specified installation standards.

C. Visual Inspection:
   1. Inspect cable jackets for certification markings.
   2. Inspect cable terminations for color coded labels of proper type.
   3. Inspect outlet plates and patch panels for complete labels.
   4. Inspect patch cords for complete labels.

D. Testing - Copper Cabling and Associated Equipment:
   1. Test backbone cables after termination but before cross-connection.
   2. Test backbone cables for DC loop resistance, shorts, opens, intermittent faults, and polarity between connectors and between conductors and shield, if cable has overall shield.
   3. Test operation of shorting bars in connection blocks.
   4. Category 5e and Above Backbone: Perform near end cross talk (NEXT) and attenuation tests.
   5. Category 5e and Above Links: Perform tests for wire map, length, attenuation, NEXT, and propagation delay.

E. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

3.04 PROJECT ACCEPTANCE

A. Demonstrate compliance of the contract to the Owner's Project Coordinators satisfaction. Request Project acceptance by certifying the following:
   1. Work has been completed.
   2. That the work is fully in compliance with the requirements of the Contract.
   3. Final observations and testing have been completed.
   4. Deficiencies noted during the final observation and testing have been completed.
   5. Testing, record drawings, and documentation have been provided.
   6. Cleanup and any restoration work required has been completed.

B. Acceptance of projects include the following steps: The Owner;s Project Coordinator may waive some of these steps for specific projects or typed of projects in the trouble ticket.

1. Contractor will notify the Owner's Project Coordinator in writing that it has completed the Project, to include completion of its testing and Quality Assurance inspection. Any required deliverables (as noted below or required by the trouble ticket) will be included with the notice.
2. The Owner's Project Coordinator will verify that the requirements of the trouble ticket have been met and that the work adheres to the requirements of the Contract. The District may waive its right to inspect the work, or have it inspected by a third party, or issue an Acceptance Certificate.
3. Deficiencies found by the Owner's Project Coordinator will be documented in a punch list, which will be provided to the Contractor within three business days of the Owner's Project Coordinator's inspection.
4. Contractor will immediately correct deficiencies documented in the punch list and advise the Owner's Project Coordinator when corrections have been made.
5. The Owner's Project Coordinator will re-inspect the work and approve corrective action or notify the Contractor of additional corrective actions required. This inspection/re-inspection process will continue until noted deficiencies are corrected. It is the District's intent that re-inspections be the exception rather than the rule. Repeated failure to timely correct punch list items may result in cancelation of the Contract.
6. If there are no deficiencies found, or once deficiencies have been corrected to the Owner's Project Coordinator's satisfaction, the Owner's Project Coordinator will issue and Acceptance Certificate.
7. Warranty will begin the day following the date of the Owner's Acceptance Certificate.

END OF SECTION

SECTION 31 10 00
SITE CLEARING

PART 1 – GENERAL

1.01 DESCRIPTION

A. In general, demolition consists of:

1. Demolition, including off-site disposal where indicated, of all existing above and below ground existing features and items described on Drawings.
2. Demolition, including off-site disposal, of all other miscellaneous items not specifically described herein or on the Drawings, but necessary for construction of new improvements.

1.02 EXISTING CONDITIONS

A. Drawings of existing conditions are for Contractor's general reference. Contractor shall carefully examine existing conditions prior to bidding. Prior to starting demolition, Contractor and Owner shall make a complete inspection of site conditions noting visible defects of items to remain.

B. At completion of demolition, Contractor and Owner shall make examination of possible damage caused by demolition work. Examination report shall be approved by both parties where no damage is apparent.

C. All construction equipment will be inspected daily for fluid leaks; no equipment will leave the upland staging area until any leaks have been repaired. Fueling and maintenance of equipment will occur only at the upland staging area. All equipment left on site shall be stored in the Staging Area.

1.03 QUALITY ASSURANCE

A. All work shall comply with the City of Longview Special Provisions and Standard Drawings https://www.mylongview.com/427/Special-Provisions-Standard-Drawings and all other jurisdictional agencies.

B. Notify adjacent property owners of work which may affect their property, potential noise, utility outage, or disruption. Coordinate with Owner.

1.04 DISPOSAL SITE

A. All demolished materials and excavation spoils shall be removed off site and deposited legally, unless otherwise described on Drawings.

B. The Contractor is responsible for all costs for removal, hauling, placing, erosion control, traffic control, roadway cleanup, and other activities to haul and place the disposal material.

PART 2 - PRODUCTS

2.01 Rigid Tree Protection Fencing:

Not Used

2.02 Temporary Security Fencing

A. Prefabricated portable galvanized chain link fence panels including fabric, posts, top and bottom rails, and temporary posts.

B. Prefabricated Portable Fence Panels:
1. Shall be a minimum of 6 feet high by minimum 8 feet wide and maximum 10 feet wide or as detailed on Plans.
a. Posts - minimum 1-1/2" OD Schedule 40 galvanized steel pipe.
b. Fabric - minimum 11 gauge galvanized two-inch diamond mesh steel wire interwoven with twisted selvage top and bottom.
d. Wire ties shall be 9-gauge aluminum wire and installed within 6" of the top and bottom of each post, and a minimum of 18" on center between and 18" on center on all top and bottom rails.
2. Prefabricated portable temporary fence panels shall be constructed to industry standards for fixed chain link fencing.
3. Panels shall be connected mechanically by means of prefabricated, bolted bracket manufactured specifically for the purpose.
4. Panels shall not be wired together.

C. Bracing:
1. Provide additional panels or outriggers as necessary to provide a rigid, stable run of fence.
2. Use only pre-manufactured outriggers or additional fence panels.

D. Driven Post Fencing:

Not Used

E. Openings for access shall be 16 feet wide with double padlocks to allow Contractor and Owner entry. Owner will provide 1 lock keyed for Owner personnel for each entry. Contractor shall provide a lock keyed for Contractor and Subcontractors for each entry.

2.03 OTHER MATERIALS AND EQUIPMENT

A. Shall be as required for work involved.

PART 3 – EXECUTION

3.01 DEMOLITION REQUIREMENTS

A. Do not close or obstruct roadways without Owner's approval.

B. As described herein and on the Drawings.

3.02 MISCELLANEOUS MATERIAL

A. Other miscellaneous material (such as metal hardware, attached timbers, etc.) shall be disposed of legally off-site.

3.03 DEMOLITION, GENERAL

A. General: Demolish indicated existing structures and site improvements completely as described on Drawings. Use methods required to complete the work within limitations of governing regulations.

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

1. Do not close or obstruct parking lot, street, walks, walkways, or other adjacent occupied or used facilities without written permission from Owner and authorities have jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

C. Verify with Owner that clearing and site improvement, removal and relocation may safely and appropriately begin.

D. Pay for and obtain all required permits and permission prior to commencing work.

3.04 TEMPORARY SECURITY FENCE INSTALLATION

A. The Staging and Work Area is closed to the public. Provide security fencing as required to prohibit unauthorized access to the site throughout the life of the Contract.

3.05 CLEARING AND GRUBBING AROUND EXISTING TREES AND VEGETATION

A. All clearing and grubbing around the bases of existing trees and vegetation to remain shall be performed by hand methods.

B. No machinery, vehicles, or storage of materials shall be allowed within the drip line of existing trees to remain except as shown on Drawings.

C. Contractor shall be responsible for all damage to existing trees and vegetation.

3.06 CLEARING AND GRUBBING OF IMPERISHABLE DEBRIS

A. Remove and dispose off site all imperishable debris that would be unsuitable for bearing or growing medium as applicable, including, but not limited to, rocks, pipe, and existing construction.

3.08 DRAINAGE

A. Keep street and site drains clear of mud and sediment build-up and open for drainage.

B. Keep open pits and holes caused by demolition work free of standing water.

3.09 REPAIRS

A. General: Promptly repair damage to adjacent construction caused by demolition operations.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received from recycling building demolition materials shall accrue to Contractor.

3.10 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, salvaged, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning of demolished materials is prohibited.

3.11 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition and clearing / grubbing operations.

END OF SECTION

SECTION 31 20 00
EARTH MOVING

PART 1 GENERAL

1.01 DESCRIPTION

The work for this Section includes all earth moving activities required to provide finished and acceptable subgrade, and finished and acceptable finish grade, including not necessarily limited to the following:

A. Excavation; import of materials; export of unsuitable or excess materials; placement of on-site or imported materials; rough and finish grading; establishing subgrade and finish grade in compliance with Contract Documents; cutting; filling; backfilling; dewatering; and compaction of all materials required to attain indicated grades, meet the required tolerances, and achieve the compaction levels specified.

B. Coordinate earthwork operations with other work of the project.

1.02 REFERENCES

A. AASHTO T180 - Moisture-Density Relations of Soils Using a 10 lb. (4.54 kg) Rammer and an 18-in. (457 mm) Drop.

B. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

C. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb. (2.49 Kg) Rammer and 12-inch (304.8 mm) Drop.

D. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

E. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18-inch (457 mm) Drop.

F. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

G. ASTM D2419 - Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

H. ASTM D2434 - Test Method for Permeability of Granular Soils (Constant Head).

I. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

J. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

K. All Work shall comply with Washington State Department of Transportation Standard Specifications (WSDOTSS), most recent published edition at time of Bid applies.

1.03 QUALITY ASSURANCE

A. Examination:

1. Visit site, and thoroughly review all plans, and specifications prior to bidding to understand the nature of the existing site, materials required, and other conditions affecting the work, that are required to provide a fully acceptable subgrade or finish grade as described in the Contract Documents.

B. Subsurface Information:

1. Review the geotechnical report for test results on the nature of existing soils and subsurface conditions on site. Contractor shall be solely responsible for determining the potential impacts upon the means and methods required to achieve conformance with the Contract Documents.
2. The geotechnical report is provided under the conditions set forth in Section 1-02.4(2) Subsurface Investigations, of the WSDOT Standard Specifications, most recent edition at time of Bid applies.
3. Additional test exploratory and other exploratory operations may be performed at the Contractor’s option; however, arranging and payment for testing shall be solely the Contractor's responsibility.

C. Tolerances:

1. Contractor is required to measure all subgrades and finish grades using Survey Grade Global Positioning System(GPS), laser technology, or a combination thereof, and shall provide a laser level or GPS unit on site for the Engineer to use to check grades.
2. Finish Subgrade Elevation - earth surfaces: plus or minus 0.03 foot from the specified plan grade, measured from any point located in the graded area.
3. Finish Subgrade Elevation - aggregate surfaces: plus or minus 0.05 foot from the specified plan grade, measured from any point located in the graded area.
4. Finish Grade Elevation - earth surfaces: plus or minus 0.03 foot from the specified plan grade, measured from any point located in the graded area.
5. Finish Grade Elevation - aggregate surfaces: plus or minus 0.05 foot from the specified plan grade, measured from any point located in the graded area.

D. Testing for Conformance

1. It is the sole responsibility of the Contractor to notify the Engineer when, in their opinion, completed subgrade and/or finish grade conforms to the specified tolerances, and is ready for inspection.
2. Do not allow or cause any of the Work performed or installed to be covered up, enclosed, or disturbed, prior to testing for conformance.
3. Should any of the Work be so enclosed, covered up, or disturbed before it has been tested, uncover and/or restore to pre-disturbed condition all such Work, at Contractor's expense.
4. Perform a survey, and submit a printout of the completed subgrade or finish grade area to be inspected. Submittal shall indicate plus/minus variation from plan elevation in 1/100 ft. increments, on a maximum 10 ft. x 10 ft. grid, obtained using the electronic technology described in 1.03.C.1 above.

5. Engineer reserves the right to utilize the GPS unit provided by the Contractor, to "field-check" any or all elevations.
6. Engineer may also run a "string test" - using a string line stretched tautly and transversely across the area being inspected, between the reference gradelines. The Engineer shall then measure the vertical distance from the string line to the completed grade, at various points along the string line, from one side of the surface to the other.

E. Compaction:
Compact fills, exposed subgrades, finish grades, and all constructed aggregate surfaces to the following percentages of maximum dry density (MDD) as determined by ASTM: D 1557 or as otherwise noted:
1. Subgrade, sports surfacing subgrade, fills beneath all structures and buildings, paved surfaces, CSBC, walls, footings, curbs, trails, and pathways: 95% MDD of the entire depth of fill.
2. Embankments and Fill Slopes: 92% MDD (unless otherwise noted).
3. Wetland Creation Areas, Buffers, and Mitigation Areas: 85% MDD.
4. Planting beds, grassed or mulched areas, and planter islands: 85% MDD.

F. Compaction Tests for Compliance:
1. The Owner shall pay for compaction tests by an independent testing laboratory.
2. It is the sole responsibility of the Contractor to notify the Engineer when compaction tests are required. Provide (48) forty-eight hours advance notice to the Engineer when tests are requested.
2. Compaction tests shall be performed on areas cleared and prepped for subgrade construction; each lift of material used for subgrade and finish grade construction; each lift of structural fills; finished subgrades; and finish grade of all materials, and at Engineer's discretion.
3. Test results must indicate conformance to this specification before proceeding with related work.
4. Contractor shall provide additional compaction and testing of failed test areas at their expense.
5. Owner shall perform compaction tests at their discretion at any time.

1.04 PROJECT CONDITIONS

A. Carefully maintain bench marks, monuments and other reference points. If disturbed or destroyed, replace at Contractor's expense.

B. In subgrade cut situations where soil is encountered that cannot be proof rolled to a firm and unyielding condition, notify the Engineer immediately. Take no further action until directed by Engineer in writing.

C. Underground utilities exist in the construction area. The general locations of these are shown on the Drawings. Contractor shall check and verify the location and elevation of all known lines before commencing work. Damage to existing utilities as a result of construction shall be promptly repaired by the Contractor at no expense to the Engineer.

D. Provide excavation plan and list of proposed equipment and methods at Preconstruction Conference, including a schedule of earthwork activities and phasing of earthwork. The Contractor shall prepare a simple diagrammatic plan showing the proposed distribution of fill material subject to Engineer approval.

1.05 BARRIERS, SAFETY GUARDS AND WARNING LIGHTS

A. Provide for public, visitor, and worker protection, as required by the Washington State Department of Labor and Industries.

PART 2 PRODUCTS

2.01 SUBMTTALS

A. Provide a submittal for all proposed materials and products, whether listed herein or not, in accordance with WSDOTSS 1-06 Control of Material.

B. Contractor shall provide testing and certification from a testing agency for all proposed products and materials, whether listed herein or not, at Contractor's expense.

C. Provide a 1-gallon sample of all proposed materials and products, whether listed herein or not, as part of the submittal process. Samples shall remain on site as examples of the approved materials.

2.02 CRUSHED SURFACING

A. Crushed Surfacing Base Course and Top Course per WSDOTSS 9-03.9(3). Mineral aggregate shall be composed of clean, uniform particulate size groups essentially free from wood waste and other deleterious materials obtained from approved material extraction quarries.

2.03 GRAVEL BACKFILL FOR PIPE ZONE BEDDING

A. Gravel backfill for utilities pipe zone bedding shall conform with Section 9-03.12(3) of the WSDOTSS.

2.04 GEOTEXTILE FABRIC FOR SEPARATION

A. Geotextile Fabric shall comply with WSDOTSS 9-33.2(1) Table 3, nonwoven Geotextile for Separation.

2.05 PERMEABLE AGGREGATE TOP COURSE

A. Material used for the top stone which comprise the permeable aggregate top course, shall be crushed, 100% naturally occurring rock from hard, non-sedimentary parent material,

equal to the aggregate for synthetic turf base and top stone manufactured by Washington Rock Quarries, Inc. Graham, WA, 98338. (253) 262-1661, or approved equal.

B. Easily erodible soft rock such as Basalt shall not be acceptable.

C. Fragmentation of aggregate larger than 5/8 inch shall be a minimum 75%. Fragmentation of aggregate 5/8 inch and smaller shall be 100%.

D. Materials for Base and Top Stone shall conform to the following sieve requirements with an error tolerance of maximum (+/- 1%).

Gradation Sieve Size	Top Stone (2 in.) Percent Passing
2” or 50mm	
1½” or 38mm	
1” or 25mm	
¾” or 19mm	
½” or 12.5 mm	100
⅜” or 9.5mm	85-100
¼” or 6.3mm	75-100
US #4 or 4.75mm	60-90
US #8 or 2.36mm	35-75
US # 16 or 1.18mm	10-55
US #30 or 600µm	0-40
US #60 or 250 µm	0-15
US #100 or 150 µm	0-6
US #200 or 75 µm	0-4

PART 3 EXECUTION

3.01 GENERAL

A. Grades shown on the drawings are finish grades. Derive subgrade elevations based on finished grades.

B. Prior to all Work in this Section, the Contractor shall become thoroughly familiar with the site conditions. Contact Engineer immediately on any and all elevations, finished or subgrade, that are unclear, or if discrepancies are apparent. Failure of to notify the Engineer of discrepancies, or to request clarification if unclear, shall be considered as the Contractor accepting the conditions, and all costs of remediation shall be the Contractor's responsibility.

C. Prior to site grading, existing site surface water and groundwater shall be collected and routed to a proper drainage away from the work area, in order to facilitate work.

D. Control drainage throughout construction to avoid getting materials excessively wet and prevent areas which hold water. Eliminate areas that hold water within 48 hours of notification from the Engineer.

3.02 SOIL MOISTURE AND WORK IN WET CONDITIONS

A. On-site soils may be moisture sensitive and weather dependent.

B. Contractor is fully responsible for scheduling and controlling earthwork operations, and for performing work in such a manner as to prevent overworking and over-saturation of on-site soils. This shall include any/all precautions necessary throughout the entire work area (including access drives/haul roads/staging areas) to control surface and groundwater to protect soils and subgrades from heavy vehicle loads, and to achieve soil moisture levels capable of achieving specified compaction. No extra compensation will be paid to the Contractor due to work performed at non-optimum times or under non-optimum conditions resulting in unsatisfactory soil conditions. The Contractor shall correct unsatisfactory conditions at no additional cost to the Engineer. Contractor is responsible for managing the soil moisture conditions to maintain the constructability of soil in order to meet the construction contract schedule. No extra compensation will be paid to the Contractor for watering or aerating the subgrade, excavated areas, or fills to achieve specified compaction.

C. Delays may occur due to inclement weather. It shall be the Contractor's responsibility to immediately notify the Engineer if weather conditions impact the Work.

D. In instances where a clear determination cannot be made by both the Contractor and the Engineer that weather or moisture conditions impact the workability of the soil or the capability of the soil to support equipment, the Contractor shall test the conditions in the presence of the Engineer, by physically attempting to operate the equipment in the area(s) in question, for a period of time deemed necessary by both the Contractor and Engineer, to determine the workability of the soil. After testing the conditions, the Contractor and Engineer shall evaluate the results of the test and make a final determination as to whether the Work can proceed or not.

3.03 EXCAVATION

A. Provide excavation required to achieve finish and subgrade elevations for all surfaces and materials. Remove roots, rocks, boulders, concrete and other obstructions and dispose of off site. Leave bearing surfaces undisturbed, level, true, and meeting elevation and compaction tolerances.

B. Obtain Engineer's inspection and confirmation of conformance prior to commence of next phase of work.

C. Provide a minimum of twelve inches of clear space between any obstruction and formwork.

D. Provide trench boxes, temporary shoring and supports appropriate to the specific conditions at all trenches, cuts, and excavations. Remove prior to backfilling, and in such a manner as not to endanger structures. Design system for loading required, and to prevent seepage of fines from cut slope. When excavating near footings, pavement, manholes, utility poles, or structures, provide lateral support to said features.

E. All excavation is unclassified, and includes excavation to subgrade, or as required to construct the work, regardless of character or materials and obstructions encountered, except as allowed in the provisions for unsuitable material, Sub-Section 3.05 herein.

F. Grade top perimeter of excavation and all work areas to prevent surface water from draining into excavation. All work required to maintain positive drainage is incidental to the work.

G. Notify Engineer immediately of subsurface conditions that are not as noted in the Geotechnical Report and discontinue affected work in area until notified to resume work in writing by the Engineer.

H. Unauthorized excavations consist of removal of materials beyond indicated subgrade elevations or dimensions without specific written direction from the Engineer. Backfill areas where unauthorized over-excavation has taken place with material specified by the Engineer, and compact to specified density per subsection 1.03.D. Unauthorized excavation, as well as remedial work required, shall be at Contractor expense.

3.04 PREPARATION OF SUBGRADE – GENERAL

A. Remove all ruts, hummocks, and other uneven surfaces by surface grading prior to placement of fill.

B. Provide berms or channels to prevent flooding of subgrade. Promptly remove all water collecting in depressions.

C. Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and re-compact per 1.03.D herein per Engineer’s written direction.

D. Final subgrades shall be crowned/sloped to establish positive drainage and shall conform to all design grades and details.

3.05 PREPARATION OF SUBGRADE - UNSUITABLE MATERIAL

A. In subgrade situations where soil is encountered that cannot be proof-rolled to a firm and unyielding condition as determined by the Engineer, the unsuitable material shall be removed to depths determined by the Engineer, and disposed off-site. Contractor shall backfill unsuitable material void with material specified by the Engineer, and compact to specified density per subsection 1.03.D to attain subgrade elevations.

B. Should the subgrade soil be rendered unsuitable material as a result of the Contractor's negligence as determined by Engineer, the Contractor will be required to excavate the unsuitable material to depths determined by Engineer, and disposed off-site. Contractor

shall backfill unsuitable material void with material specified by the Engineer, and compact to specified density per subsection 1.03.C at no cost to the Engineer.

C. "Contractor negligence" is defined as Contractor failing to deploy measures to protect the site from weather conditions, overworking of moisture sensitive soils, and directing drainage to moisture sensitive soils.

3.06 DEWATERING

A. Provide and maintain at all times during construction, ample means and devices which promptly remove and dispose of all water from every source entering the excavations or other parts of the Work.

B. Dewater by means which will ensure dry excavations and the preservation of the final lines and grades of bottoms of excavations.

3.07 FILL AND COMPACTION – GENERAL

A. After subgrade compaction has been approved, spread approved fill material in loose lifts not exceeding ten (10) inches in thickness. Each lift shall be conditioned to the optimum moisture content and compacted to the specified minimum density prior to placing the next lift. Earthwork shall be performed under the observation of the Engineer to ensure contract compliance.

B. Water or aerate the fill material as necessary, and thoroughly mix to obtain a moisture content which will permit proper compaction. No extra compensation will be paid to the Contractor for watering or aerating the fill material to achieve specified compaction.

C. Do not place, spread or compact any fill material during unfavorable weather conditions. Do not resume operations until moisture content and fill density will conform to specification requirements.

D. Compact each soil layer to at least the minimum density specified. Repeat compaction process until plan grade and specified compaction density is attained.

E. Compact areas not accessible to rollers or compactors with pneumatic hand tampers or other approved means. Use hand vibrators within 5'-0" of foundations and walls. No heavy compaction equipment shall be allowed adjacent to walls and foundations.

F. During Warranty period, replace work damaged by settlement and replace slabs and pavement which develop settlement cracks, all at no additional cost to the Engineer.

G. In fill areas where grade slopes more steeply than 5H:IV (horizontal:vertical) the base of any embankment shall be tied to the firm stable subsoil by appropriate keying and benching.

3.08 BUILDINGS, PAVEMENTS, TRAIL, AND STRUCTURAL FOUNDATIONS:

A. General:
Includes all building and structural foundations, hot-mixed asphalt, cement concrete pavements, and trail surfaces.

B. Cut:
Compact the top twelve (12) inches of the subgrade to a firm and unyielding condition meeting the minimum tolerances specified herein.

C. Fill:
1. Place Common Borrow or Gravel Borrow over compacted subgrade in loose lifts no greater than ten (10) inches in loose thickness and compact each lift to the minimum density specified herein.
2. Compact the Crushed Rock Surfacing beneath the pavement sections and structures to the minimum density specified herein.
3. Place Clean Crushed Aggregate beneath building slabs and compact to the minimum density specified herein.

3.09 GRADING

Except as otherwise directed by the Engineer, perform all rough and finish grading required to attain the elevations shown on the Drawings. Provide the subgrade grading to an elevation to allow for finish materials and to achieve a smooth transition to undisturbed grades at project perimeter.

3.10 TREATMENT AFTER COMPLETION OF GRADING

A. Protect all areas from oversaturation and excessive vehicle loads. Perform work in such a manner as to minimize vehicle crossings.

B. Use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

C. Repair at Contractor's expense, all damage and unsatisfactory conditions including wheel ruts and vehicle/equipment tracks, humps, low spots/depressions, footprints, rills, erosion, washes, debris drift piles, which may develop for any reason between the time finish grading is accepted and permanent stabilization measures have completely stabilized the graded area.

3.11 WET WEATHER PROVISIONS

A. The subsurface conditions may vary throughout the site; refer to the Geotechnical Report.

B. Existing soils on site are likely to be susceptible to changes in water content and tend to become muddy, unstable and difficult to proof roll and compact if moisture content significantly exceeds the optimum.

C. Performing earthwork during dry weather would reduce these problems associated with

rainwater, trafficability, and handling of wet soils. Wet and potentially muddy conditions should be anticipated during subsurface excavations.

3.12 DISPOSAL OF EXCESS MATERIALS

A. Excavated material (not Unsuitable Material) in excess of the material used to attain design grades shown on the Drawings, shall be considered Common Borrow provided it meets the Common Borrow criteria as determined by Engineer.

B. Unacceptable excavated material including, but not limited to trash, rebar, and woody debris shall be hauled off-site and disposed of in a legal manner.

END OF SECTION

SECTION 31 44 00
TOPSOIL PLACEMENT & LANDSCAPE GRADING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Placement and Finish Grading of Topsoil Type A.

1.02 REFERENCES

A. ASTM D 1557: Method for Laboratory Compaction Characteristics of Soil using Modified Effort.

1.03 RELATED WORK

A. Coordinate related work specified in other parts of the Project Specifications, including, but not limited to the following:
   1. Site Clearing – 311000
   2. Earth Moving – 312000

1.04 DEFINITIONS

A. Percent Compaction: The required in-place dry density of the material, expressed as a percentage of the maximum dry density of the same material determined by ASTM D1557-78 test procedure.

B. Subgrade: The soil surface on which topsoil is placed.

C. Finished Grades: The final grade elevations indicated on the Grading Drawings.

D. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of the Engineer in writing.

E. Grading Drawings: Plans, sections, and profiles showing finished surface grades.

F. Elements with Fixed Elevations: Trails, hot-mix asphalt paving, concrete pads, footings, foundations, walls, earthwork, curbs, and other structures with fixed-spot elevations.

1.05 SITE CONDITIONS

A. Environmental Protection:
   1. Soil Moisture Content: Work soil only when within 2% of optimum moisture content.
   2. Do not work soil when it is so dry that dust will form in air or that clods do not break readily.
   3. Perform work in such a manner as to prevent overworking and over-saturation.
   4. Protection includes any/all precautions necessary throughout the entire work area (including access drives/haul roads/staging areas) to control surface water, to protect soils and subgrades from heavy vehicle loads, and to achieve soil moisture levels capable of achieving specified compaction.

5. No extra compensation will be paid to the Contractor due to work performed at non-optimum times or under non-optimum conditions resulting in unsatisfactory soil conditions.
6. The Contractor shall correct unsatisfactory conditions at no additional cost to the Engineer.

1.06 SUBMITTALS

A. Submit transmittal letter indicating Contractor's intent to take Option 1 or Option 2 to provide Topsoil Type A.

B. If Option 1 is taken, submit complete test results from a Physical Soils Laboratory indicating existing physical properties, pH, and nutrient levels of the existing onsite topsoil, in comparison to the same requirements for BMP T5.13. Include recommendations for lime, fertilizer, and other amendments based growing turf and ornamental plants.
   1. Submit test results a minimum 3 weeks prior to placement.
   2. Include Contractor certification that all amendments comply with specifications.
   3. Provide a transmittal with test data that provides the project name, testing facility, date of test, contact information for testing facility, and the information listed above.

C. If Option 2 is taken, submit complete test results from the topsoil vendor indicating the pre-mixed topsoil meets all requirements for BMP T5.13.
   1. Submit test results a minimum 3 weeks prior to placement.
   2. Include Contractor certification that all amendments comply with specifications.
   3. Provide a transmittal with test data that provides the project name, date of test, vendor contact information for testing facility, and the information listed above.

PART 2 - PRODUCTS

2.01 GENERAL

A. Contractor shall provide and incorporate all-natural soil and soil additives required for the performance of this Contract and for determining the volume of soil and additives required to fulfill Contract obligations.

B. The Contractor shall be responsible for whatever soil additives may be required, as recommended by the testing laboratory.

C. The cost for testing and soil additions shall be borne by the Contractor. Submit laboratory tests of for Engineer’s review and compliance verification prior to use on project site.

2.02 GRADING EQUIPMENT

A. Appropriate size and flexibility to achieve the sculptural forms, profiles, straight slopes, and slope rounding indicated on the Grading Drawings.

2.03 TOPSOIL TYPE A

A. Option 1: Under Topsoil Type A - Option 1, soil shall be:

1. Native topsoil taken from within the project limits from the area where excavation is to be performed.
2. Amended by the Contractor on site to meet the requirements for BMP T5.13.
3. Free of weeds, pests, toxic substances and other undesirable material harmful to turf grass or ornamental plant growth.

B. Option 2: Under Topsoil Type A - Option 2, soil shall be:
1. A premixed soil imported from offsite and meeting the requirements of BMP T5.13.
2. Free of weeds, pests, toxic substances and other undesirable material harmful to turf grass or ornamental plant growth.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Subgrade:
1. Verification: Verify that the subgrades have been graded within the tolerances specified, minus the topsoil depth, of the grades shown on the grading Drawings.
2. Aesthetic Acceptance: Verify that Engineer has accepted the subgrade. Do not commence placement of topsoil materials nor disturb the subgrade until the subgrade has been accepted for aesthetic correctness.
3. Notification of Discrepancies: Notify the Engineer in writing of any discrepancies.

3.02 SURVEY REQUIREMENTS

A. Lines and Levels: Establish lines and levels, locate and lay out by instrumentation and similar appropriate means for all planting area finish grades.

B. General Staking: Provide a sufficient quantity of grade stakes as required to provide minimum depth layer of topsoil.

3.03 PREPARATION

A. General:
1. Perform work in such a manner as to prevent overworking and over-saturation of on-site soils. This shall include any/all precautions necessary throughout the entire work area (including access drives/haul roads/staging areas) to control surface and groundwater, to protect soils and subgrades from heavy vehicle loads, and to achieve soil moisture levels capable of achieving specified compaction.
2. No extra compensation will be paid to the Contractor due to work performed at non-optimum times or under non-optimum conditions resulting in unsatisfactory soil conditions.
3. The Contractor shall correct unsatisfactory conditions at no additional cost to the Engineer.
4. Contractor is responsible for managing the soil moisture conditions to maintain the constructability of soil in order to meet the construction contract schedule.
5. No extra compensation will be paid to the Contractor for watering or aerating the subgrade, excavated areas, or fills to achieve specified compaction.

B. Delays may occur due to inclement weather. It shall be the Contractor's responsibility to immediately notify the Engineer and request an extension of completion time for justified reasons.

C. Do not allow or cause any of the Work performed or installed to be covered up or enclosed prior to all of the required reviews, tests and approvals.

D. Should any of the Work be so enclosed or covered up before it has been approved, the Contractor shall uncover all such Work, at no additional cost to the Engineer.

E. After the Work has been completely tested, inspected and approved, make all repairs and replacements necessary to restore the Work to the condition in which it was found at the time of uncovering, all at no additional cost to the Engineer.

F. Protection of Existing Conditions:

General: Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, irrigation systems, plant materials and paving on or adjacent to the site of the Work.

G. Surface Preparation:
1. Inspection: Inspect subgrade soil for stones over two (2) inches square, sticks, oils, chemicals, plaster, concrete, and other deleterious materials.
2. Removal: Perform all Work necessary to remove the deleterious materials before and after subgrade preparation.

3.04 PREPARING SUBGRADE

A. Prepare subgrade to avoid excessive compaction beyond what is specified in Section 312000 for landscape areas. If Engineer determines that excessive compaction has occurred, it shall be corrected immediately before Topsoil Placement.

B. Prepare subgrade to meet the requirements of BMP T5.13.

3.05 TOPSOIL PLACEMENT

A. After the prepared and scarified subgrade has been approved by the Engineer, Topsoil Type A shall be placed carefully to avoid damage or displacement of other materials such as drainage components, pavements, trails, geotextile fabrics, etc.

B. Verify method of transporting soil with Engineer. Take all precautions to avoid damage and deploy improvements necessary to protect the existing improvements.
1. Topsoil Type A shall be placed to in the areas indicated on the Drawings to a uniform, compacted depth of three (3) inches.
2. At curbs, pavement edges, edges of trails, and other hardscape material edges where grassing is specified, provide for the compacted full volume and depth of Topsoil Type A and the specified grassing material combined, to achieve a finish grade surface 1/2 inch below all pavement surfaces.
3. Roll and compact Topsoil Type A as specified.
4. After compaction, place Topsoil Type A to fill in low spots and fine grade to achieved aesthetic grades.

3.06 PROTECTION

A. Protect all areas from oversaturation, and foot and vehicle traffic. Perform work in such a manner as to minimize vehicle crossings.

B. Use all means necessary to prevent erosion of completed topsoiled and mulched areas during construction and until such time as permanent drainage and erosion control measures have been installed.

C. Repair at Contractor's expense, all damage and unsatisfactory conditions including wheel ruts and vehicle/equipment tracks, humps, low spots/depressions, footprints, rills, erosion, washes, debris drift piles, which may develop for any reason between the time finish grading is accepted and permanent stabilization measures have completely stabilized the graded area.

D. Settlement Repair: Correct settlement within the Warranty period at no cost to the Engineer.

E. Drainage: Keep surface of topsoil in such condition that it will drain readily and effectively.

F. Materials, Tools, and Equipment: In handling materials and operating tools and equipment, protect the topsoil from damage by laying down planks, plywood, or other accepted protective materials where required.

G. Storage of Materials: Do not store or stockpile materials on topsoil.

H. Dust Control: Use water trucks or temporary irrigation and take all precautions needed to prevent a dust nuisance to adjacent public or private properties.

3.07 CLEANUP

A. Daily: Keep all areas of Work clean, neat, and orderly at all times.

B. Final: Clean up and remove all deleterious materials and debris from the entire Work area prior to Final Completion.

END OF SECTION

SECTION 32 14 13
PERMEABLE PAVERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Permeable interlocking concrete pavers.
2. Crushed stone bedding material.
3. Open-graded subbase aggregate.
4. Open-graded base aggregate.
5. Bedding and joint/opening filler materials.
6. Edge restraints.
7. Geotextiles.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)
1. C 67, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
2. C 131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
3. C 136, Method for Sieve Analysis for Fine and Coarse Aggregate.
4. C 140, Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8 – Freezing and Thawing.
5. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
6. C 936, Standard Specification for Solid Interlocking Concrete Pavers.
7. C 979, Specification for Pigments for Integrally Colored Concrete.
8. D 698, Test Methods for Moisture Density Relations of Soil and Soil Aggre-gate Mixtures Using a 5.5-lb (2.49 kg) Rammer and 12 in. (305 mm) drop.
9. D 1557, Test Methods for Moisture Density Relations of Soil and Soil Ag-gregate Mixtures Using a 10-lb (4.54 kg) Rammer and 18 in. (457 mm) drop.
10. D 1883, Test Method for California Bearing Ratio of Laboratory-Compacted Soils.
11. D 4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

B. Interlocking Concrete Pavement Institute (ICPI)
1. Permeable Interlocking Concrete Pavement manual.

1.03 SUBMITTALS

A. In accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Manufacturer’s drawing and details: Indicate perimeter conditions, junction with other materials, expansion and control joints, paver [layout,] [patterns,] [color arrangement,] installation [and setting] details. Indicate layout, pattern, and relation-ship of paving joints to fixtures and project formed details.

C. Sieve analysis of aggregates for base and bedding materials per ASTM C 136.

D. Soils report indicating density test reports, classification, and infiltration rate measured on-site under compacted conditions, and suitability for the intended project.

E. Erosion and sediment control plan.

F. Stormwater management (quality and quantity) calculations.

G. Permeable concrete pavers:
1. Manufacturer’s product catalog sheets with specifications.
2. [Four] representative full-size samples of each paver type, thickness, color, and finish. Submit samples indicating the range of color expected in the finished installation.
3. Accepted samples become the standard of acceptance for the work of this Section.
4. Laboratory test reports certifying compliance of the concrete pavers with ASTM C 936.
5. Manufacturer's material safety data sheets for the safe handling of the specified materials and products.

1.04 QUALITY ASSURANCE

A. Paver Installation Subcontractor Qualifications:
1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.
2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

B. Regulatory Requirements and Approvals: [Specify applicable licensing, bonding or other requirements of regulatory agencies.].

C. Mock-Ups:
1. Install a 10 ft x 10 ft (3 x 3 m) paver area.
2. Use this area to determine surcharge of the bedding sand layer, joint sizes, lines, laying pattern(s), color(s) and texture of the job.
3. This area will be used as the standard by which the work will be judged.
4. Subject to acceptance by Owner, mock-up may be retained as part of finished work.
5. If mock-up is not retained, remove and properly dispose of mock-up.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Comply with manufacturer’s ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged container packaging with identification tags intact.
1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
2. Deliver concrete pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by forklift or clamp lift.

3. Unload pavers at job site in such a manner that no damage occurs to the product or existing construction

D. Storage and Protection: Store materials in protected area such that they are kept free from mud, dirt, and other foreign materials.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not install in rain or snow.

B. Do not install frozen bedding materials.

1.07 MAINTENANCE

A. Extra materials: Provide twenty square feet (20 sf) of additional paver material for use by owner for maintenance and repair.

B. Pavers shall be from the same production run as installed materials.

PART 2 - PRODUCTS

2.01 PERMEABLE PAVERS

A. Manufacturer: Belgard Commercial or approved equal.
1. Contact: Doug Harrison 971.202.6632.

B. Permeable Paver Units:
1. Paver Type: Aqualine Series 6x6.
a. Material Standard: Comply with material standards set forth in ASTM C 936.
b. Primary paver color Gray, secondary paver color Dark Charcoal.
c. Size: 3 1/8 inches x 6 inches x 6 inches.
d. Average Compressive Strength (ASTM C 140): 8000 psi (55 MPa) with no individual unit under 7200 psi (50 MPa).
e. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.
f. Freeze/Thaw Resistance (ASTM C 67): Resistant to 50 freeze/thaw cycles with no greater than 1% loss of material. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions: No substitution will be considered unless a written request for approval is submitted by the contractor. Each such request shall describe the proposed substitution in its entirety including name of the material, drawings, catalog cuts, performance or test data and all other information required for an evaluation. The submittal shall also include a statement noting all changes required in adjoining, dependent or other interrelated work necessitated by the incorporation of the proposed substitute. The bidder shall bear the burden of proof of merit of the proposed substitution. The Project Landscape Architects decision of approval or disapproval of a proposed substitution shall be final.

2.03 CRUSHED STONE FILLER, BEDDING, BASE AND SUBBASE

A. Crushed stone with 90% fractured faces, LA Abrasion < 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1883.

B. Do not use rounded river gravel

C. All stone materials shall be washed with less than 1% passing the No. 200 sieve.

D. Joint/opening filler, bedding, base and subbase: conforming to ASTM D 448 gradation as shown in Tables 1, 2 and 3 below:

Table 1

Grading Requirements for ASTM No. 8 Bedding and Joint/Opening Filler
Sieve Size Percent Passing
12.5 mm (1/2 in.) 100
9.5 mm (3/8 in.) 85 to 100
4.75 mm (No. 4) 10 to 30
2.36 mm (No. 8) 0 to 10
1.16 mm (No. 16) 0 to 5

Table 2
Grading Requirements for ASTM No. 57 Base Sieve Size Percent Passing
37.5 mm (1½ in.) 100
25 mm (1 in.) 95 to 100
12.5 mm (1/2 in.) 25 to 60
4.75 mm (No. 4) 0 to 10
2.36 mm (No. 8) 0 to 5

Table 3
Grading Requirement for ASTM No. 2 Subbase Sieve Size Percent Passing
75 mm (3 in.) 100
63 mm (2½ in.) 90 to 100
50 mm (2 in.) 35 to 70
37.5 mm (1½ in.) 0 to 15
19 mm (3/4 in.) 0 to 5

E. Gradation criteria for the bedding and base:

Note: D_x is the particle size at which x percent of the particles are finer. For example, D_{15} is the particle size of the aggregate for which 15% of the particles are smaller and 85% are larger.

1. $D_{15\ \text{base stone}}/D_{50\ \text{bedding stone}} < 5$.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Acceptance of Site Verification of Conditions:

1. General Contractor shall inspect, accept and certify in writing to the paver installation subcontractor that site conditions meet specifications for the fol-lowing items prior to installation of interlocking concrete pavers.
    a. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.
    b. Provide written density test results for soil subgrade to the Owner, General Contractor and paver installation subcontractor.
    c. Verify location, type, and elevations of edge restraints, structures, and drainage
2. Do not proceed with installation of bedding and interlocking concrete pavers until subgrade soil conditions are corrected by the General Contractor or designated subcontractor.

3.02 PREPARATION

A. Verify that the soil subgrade is free from standing water.

B. Stockpile joint/opening filler, base and subbase materials such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.

3.03 INSTALLATION

A. General
1. Any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities shall be removed before ap-plication of the geotextile and subbase materials.
2. Keep area where pavement is to be constructed free from sediment during entire job. Base and bedding materials contaminated with sediment shall be removed and replaced with clean materials.
3. Do not damage drainpipes, overflow pipes, observation wells, or any inlets and other drainage appurtenances during installation. Report any damage immediately to the project engineer.

B. Geotextiles
1. Place on bottom and sides of soil subgrade. Secure in place to prevent wrinkling from vehicle tires and tracks.
2. Overlap a minimum of 0.6 m (24 in.) in the direction of drainage.]

C. Open-graded subbase and base
1. Moisten, spread and compact the No. 2 subbase in 100 to 150 mm (4 to 6 in.) lifts [without wrinkling or folding the geotextile. Place subbase to protect geotextile from wrinkling under
2. For each lift, make at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 T (10 t) vibratory roller until there is no visible movement of the No. 2 stone. Do not crush aggregate with the roller.
3. The surface tolerance of the compacted No. 2 subbase shall be ±20 mm (±¾ in.) over a 3 mm (10 ft.) straightedge.
4. Moisten, spread and compact No. 57 base in 100 mm to 150 mm (4 to 6 in.) lifts over the compacted No. 2 subbase with a minimum 10 T (10 t) vibratory roller until there is no visible movement of the No. 57 stone. Do not crush aggregate with the roller.

5. The surface tolerance the compacted No. 57 base should not deviate more than. ±13 mm (±½ in.) over a 3 m (10 ft.) straightedge.

D. Bedding layer
1. Moisten, spread and compact the No. 8 bedding material. Compact with a minimum 10 T (10 ton) static roller. Make at least [4] passes. No visible movement should occur in the base material when compaction is complete. Do not crush aggregate with the roller.
2. 2. The surface tolerance of the compacted surface should not deviate more than ±13 mm (±½ in.) over a 3 m (10 ft.) straightedge.

E. Permeable interlocking concrete pavers and joint/opening fill material
1. Lay the pavers [paving slabs] in the pattern(s) and joint widths shown on the drawings. Maintain straight pattern lines.
2. Fill gaps at the edges of the paved area with cut units. Cut pavers subject to tire traffic shall be no smaller than 1/3 of a whole unit.
3. Cut pavers to be placed along the edges with a [double-bladed split-ter] or masonry saw.
4. Compact and seat the pavers into the bedding material using a low-amplitude, 75-90 Hz plate compactor capable of at least 22 kN (5,000 lbs.) centrifugal compaction force. This will require at least two passes with the plate compactor.
5. Do not compact within 2 m (6 ft) of the unrestrained edges of the paving units.
6. Fill the openings and joints with No. 8 stone.
7. Remove excess aggregate by sweeping pavers clean.
8. Compact the pavers again, vibrating the aggregate into the openings. Apply additional aggregate to the openings and joints, filling them completely. Remove excess aggregate by sweeping and compact the pavers. This will require at least two passes with the plate compactor.
9. All pavers within 2 m (6 ft) of the laying face must be left fully compacted at the completion of each day.
10. The final surface tolerance of compacted pavers shall not deviate more than ±10 mm (±3/8 in.) under a 3 m (10 ft) long straightedge.
11. The surface elevation of pavers shall be 3 to 6 mm (1/8 to ¼ in.) above adjacent drainage inlets, concrete collars or channels.

3.04 FIELD QUALITY CONTROL

A. After sweeping the surface clean, check final elevations for conformance to the drawings.

B. Lippage: No greater than 3 mm (1/8 in.) difference in height between adjacent pavers.

C. The surface elevation of pavers shall be 3 to 6 mm (1/8 to 1/4 in.) above adjacent drainage inlets, concrete collars or channels.

3.05 PROTECTION

A. After work in this section is complete, the General Contractor shall be responsible for protecting work from sediment deposition and damage due to subsequent construction activity on the site.

END OF SECTION

SECTION 32 31 13
CHAIN LINK FENCING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section includes providing galvanized framework, posts and accessories for project chain link fencing.

1.02 SUBMITTALS

A. Provide Submittals for all materials.

1.03 REFERENCE STANDARDS

A. ASTM F 567-07 Standard Practice for Installation of Chain Link Fence

B. ASTM F 626-06 Standard Specification for Fence Fittings

C. ASTM F 1043-08 Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework

D. ASTM F 1553-06 Standard Guide for Specifying Chain Link Fence

E. ASTM F 2000-06 Standard Guide for Fences for Ballfields and Other Sport Facilities

F. ASTM A653 / A653M - 08 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

G. ASTM A924 / A924M - 08a Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

H. ASTM F 1083-04 Standard Specification for Pipe, Steel, Hot Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

I. ASTM F 668-07 Polyvinyl Chloride (PVC) and other Organic Polymer-Coated Steel Chain-Link Fence Fabric

PART 2 - PRODUCTS

2.01 CHAIN LINK FENCE FABRIC

1. Existing chain link fence fabric to be salvaged and reused.

2.02 STEEL FENCE FRAMING

A. All Steel Framing shall comply with Table 3, Group IC of ASTM F 1043-08

B. FABRIC BANDS: Fasten fabric to line posts at 15-inch intervals, to top and bottom rail at 15-inch intervals.

C. POST TOPS: All posts shall be equipped with heavy malleable, cast iron or pressed steel, galvanized caps designed to exclude moisture from post. Post tops shall be rounded with no sharp protrusions. End Post tops shall have a cut and fitted round plate of corresponding thickness of pipe welded flat.

D. END, CORNER AND TERMINAL POSTS: Terminal posts shall be 4 in. OD, Group IC Pipe per ASTM F 1043-08 or Schedule 40 pipe galvanized in accordance with A.S.T.M. Designation A-120. Corner posts shall be placed when the line of fence changes direction 20 or more degrees.

E. PULL POSTS: Pull posts shall be placed not over 1500' apart in each line of fence or when a grade change of more than 20 degrees occurs.

F. INTERMEDIATE (Line) POSTS: Line posts shall be 2.375 in. OD, Group IC Pipe per ASTM F 1043-08 or Schedule 40 pipe galvanized in accordance with A.S.T.M. Designation A-120.

G. TOP, and MID RAIL: Shall be 1.66" O.D., Group IC Pipe per ASTM F 1043-08 or Schedule 40 pipe galvanized in accordance with A.S.T.M. Designation A-120. Top and mid rail shall form a continuous brace from post to post in each line of fence and shall be securely held in place at the posts with bands and cups or a positive receptacle pocket.

H. BOTTOM RAIL: Shall be 1.875" O.D., Group IC Pipe per ASTM F 1043-08 or Schedule 40 pipe galvanized in accordance with A.S.T.M. Designation A-120. Bottom rail shall form a continuous brace from post to post in each line of fence and shall be securely held in place at the posts with bands and cups or a positive receptacle pocket.

I. TERMINAL POST BRACING: Terminal post brace sections shall have adjustable steel truss rods. Brace is to be installed between the top rail and the grade line and is to extend from the terminal post to the first adjacent line post. Braces shall be securely attached to the terminal and line posts with bands and cups or at the terminal with a positive receptacle pocket and at the line post with a tamper-proof staple attachment.

2.03 ACCESSORIES

A. Chain link fence accessories per ASTM F 626: Provide items required to complete fence system. Galvanize each ferrous metal item and finish to match framing.

B. Top Rail and Brace Rail Ends: Pressed steel per ASTM F626, for connection of rail and brace to terminal posts.

C. Top Rail Sleeves: 7” (178 mm) expansion sleeve with spring, allowing for expansion and contraction of top rail.

D. Wire Ties: 9 gauge [0.148” (3.76 mm)] galvanized steel wire for attachment of fabric to line posts. Double wrap 13 gauge [0.092” (2.324 mm)] for rails and braces. Hog ring ties of 11 gauge for attachment of fabric to tension wire.

E. Brace and Tension (stretcher bar) Bands: Pressed steel.

F. Tension Bars: One-piece lengths equal to 2 inches (50 mm) less than full height of fabric with a minimum cross-section of 3/16” x 3/4” (4.76 mm x 19 mm) or equivalent fiber glass rod. Provide tension (stretcher) bars where chain link fabric meets terminal posts.

G. Three Strands Barbed Wire: Provide barbed wire conforming to ASTM A121, Design Number 12-4-5-14R, double 12 ½ gauge (0.099 in.) twisted strand wire, with 14 gauge, round, 4-point barbs spaced no more than 125 mm, 5 inches apart. Coating Type Z – Zinc coated: Strand wire coating Type Z, Class 3, 0.80 oz/sf, barb coating 0.70 oz/sf.

H. Truss Rods & Tightener: Steel rods with minimum diameter of 5/16" (7.9 mm). Capable of withstanding a tension of minimum 2,000 lbs.

I. Nuts and bolts are galvanized.

2.04 COATING

A. Steel Fence Framing, & Fencing Accessories: Standard weight schedule 40; minimum yield strength of 30,000 psi (205 MPa); sizes as indicated. Hot-dipped galvanized with minimum average 1.8 oz/ft² (550 g/m²) of coated surface area.

2.05 SETTING MATERIALS

A. Concrete: Minimum 28-day compressive strength of 4,000 psi (20 MPa).

B. Hand mixing of concrete will be permitted on batches under one (1) cubic yard. All batches exceeding this volume shall be machine mixed.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify areas to receive fencing are completed to final grades and elevations.

3.02 CHAIN LINK FENCE FRAMING INSTALLATION

A. Install chain link fence in accordance with ASTM F 567 and manufacturer's instructions.

B. Locate terminal post at each fence termination and change in horizontal or vertical direction of 30° or more.

C. Check each post for vertical and top alignment and maintain in position during placement and finishing operations.

D. Truss Rod: Provide a 5/16" OD adjustable truss rod at all ends corner panels, and at change in directions.

E. Top Rail: Install lengths, 21 ft. (6400 mm). Connect joints with sleeves for rigid connections for expansion/contraction.

F. Bottom Rail: Install 1.875 in. OD bottom rails to be held securely in place at each post with brackets and cups, where shown on Drawings. Set bottom edge of rail at 1-1/2 in. clear of finish grade.

G. Post Spacing: Posts shall be evenly spaced in the line of fence on a maximum of 9-foot center unless otherwise noted.

H. Concrete: Concrete for post foundations shall be class 3000 concrete mixture.

3.03 CHAIN LINK FABRIC INSTALLATION

A. Fabric: Install fabric on the side indicated on Drawings. Attach so that fabric remains in tension after pulling force is released. Bottom of fabric selvage shall be one and one-half inch (1-1/2") above finish grade. Attach fabric with wire ties to line posts at 15" on center and to rails and braces. Attach fabric with Hog Rings to tension wire at 24" (600 mm) on center.

B. Tension (stretcher) bars: Pull fabric taut; thread tension bar through fabric and attach to terminal posts with bands or clips spaced maximum of 15" (381 mm) on center.

3.04 ACCESSORIES

A. Tie wires: Bend ends of wire minimum two times around fabric Single folding of tie ends is not acceptable under any circumstances. Assure clipped ends do not protrude beyond the fence fabric and face away from the fabric side of fence to minimize hazard to persons and clothing.

B. Fasteners: Install nuts on side of fence opposite fabric side for added security.

3.05 SALVAGED FENCING INSTALLATION

A. Chain link fencing designated to be salvaged and reinstalled as determined by Contractor, shall be relocated and reinstalled in the same manner and condition found before it was salvaged and installed in accordance with this Section.

B. Replace fittings and materials damaged during demolition with new in accordance with this Section.

3.06 CLEANING

A. Clean up debris and unused material. Completely remove all concrete, mud, and dirt from posts, fabric, and fittings. Police all wire ties, clipped metals, and fencing related debris and remove from the site.

B. Paint all scratches, marks, and gouges black to match fence.

C. All excess concrete shall be disposed off-site.

END OF SECTION

SECTION 32 92 00
TURF AND GRASSES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section includes the following:
1. Soil preparation for seeding and sodding.
2. Installing seeding and sod.
3. Watering and maintenance of seeding and sod until Project Acceptance.

1.02 QUALITY ASSURANCE

A. Installer Qualifications: Installer Qualifications: The Landscape Contractor shall be licensed in the State of Washington, shall have a minimum of 5 years demonstrated experience on projects similar in scope and materials.

1.03 SUBMITTALS

A. Seeding and Sodding Schedule

B. Statement of Disease Free Certification for Sod and Seed Mix

C. Complete analysis of the seed shall be include percent of pure seed, germination, other crop seed, inert and weeds, and the germination test data. All crop seed in excess of one (1) percent must be itemized. Contractor must submit original label to the Engineer.

D. Commercial Fertilizer product information, including product label, fertilizer analysis, release rate, release mechanism, etc.

E. Mulch for hydroseeding product information

PART 2 PRODUCTS

2.01 SOD

A. Sod shall be a mix of northwest tolerant turfgrass species equal to Country Green Perfect Blend Sod grown from the following seed mix:

Seed Type	% by Weight
Perennial Ryegrass (1/3 Palmer or Manhattan, 1/3 Saturn or Competitor, 1/3 Charger or Dandy)	60
Red Fescue	20
Chewing's Fescue	20

B. Sod shall be well-rooted, minimum two-year old stock. The sod shall be certified sod, free of weeds, undesirable native grasses, insects and diseases and shall be grown on soil comprised of approximately 85% sand/15% topsoil, free of thatch and organic-material layering.

C. Provide sod with soil layer of uniform thickness not to exceed 1.5 inch, with maximum 5 percent deviation. Broken rolls with uneven ends will not be acceptable. Sod incapable of supporting its own weight when suspended vertically with a firm grasp on upper 10 percent will be rejected.

D. If netting is used to lift and secure sod rolls, it shall be removed prior to installation.

2.02 SEED MIX

A. Seed Mix

1. Seed Mix shall be equal to Country Green Perfect Blend Mix as follows:

Seed Type % by Weight

Perennial Ryegrass	60
(1/3 Palmer or Manhattan, 1/3 Saturn or Competitor, 1/3 Charger or Dandy)	
Red Fescue	20
Chewing's Fescue	20
Application Rate	8 lbs./1000 sq. ft.

2. All seed shall be 98% pure with a minimum of 90% germination. Total weed seed shall not exceed 0.5%. Maximum percent inert and other crop shall be 1.50% of total seed mix
3. Seed Law. All seeds shall conform to the requirements of the Washington State Seed Laws, and where applicable, the Federal Seed Act.
4. Noxious Weed Seed. All seed shall be free of seeds of weeds listed as primary noxious by the Washington State Seed Law. Seeds shall not contain seeds of weeds listed as secondary noxious by the Washington State Seed Law, singly or collectively in excess of the labeling tolerance specified by the Washington State Seed Law.
5. Rejection. When seeds furnished under this specification fail to meet the requirements within tolerance, as provided by the Washington State Seed Law, the lot shall be rejected or subjected to fiscal adjustment.
6. Re-cleaning. Seeds shall be thoroughly re-cleaned and of uniformly good quality and appearance throughout each lot.
7. Preparation for Delivery. Seeds shall be packed in clean, sound containers of uniform weight. Seed shall be labeled as required by Law.
8. Reference Specifications. Chapter 15.49, Washington State Seed Law.

B. General:

1. All seeds shall conform to the requirements of the Washington State Seed Law and when applicable, the Federal Seed Act.
2. All seeds shall be free of weed seed listed as primary noxious by the Washington State Seed Law. Seeds shall not contain weed seeds listed as secondary noxious by

Washington State Seed Law single or collective in excess of the labeling tolerance specified by the Washington State Seed Law.

3. Seeds shall be packed in clean, sound containers of uniform weight. Seeds shall be labeled as required by law.
4. Reference Specification; Chapter 15.49, Washington State Seed Act.
5. Mulch: The Contractor shall apply 200 pounds per acre of mulch from wood fiber.

2.03 HYDROSEEDING EQUIPMENT AND MATERIALS

A. Seed shall be spread by approved mechanical (hopper or culti-packer) or hydro-seed/mulch method only.

B. Mulch shall be SILVA MULCH at forty-five (45) pounds per 1,000 square feet.

C. Binder shall be J-TAC at two (2) pounds per 1,000 square feet.

2.04 FERTILIZER

A. Shall be complete commercial brand fertilizer with chemical analysis shown on unopened container when delivered.

B. Commercial Fertilizer for sod and seed areas before and after planting shall include the following analysis:

Total Nitrogen (N) 10%
4.6% Ammoniacal Nitrogen
3.2% Urea Nitrogen
3.3% Coated Slow Release Urea Nitrogen
2.3% Slowly Available Water Soluble Nitrogen*
1.6% Water Insoluble Nitrogen

Available Phosphoric Acid ($P_2 0_5$)	Slow Release	20%
Soluble Potash ($K_2 0$)	Slow Release	20%
Sulfur (S)		4%
Boron (B)		0.06%
Copper (Cu)		0.06%
Iron (Fe)		1%
Manganese (Mn)		0.15%
Zinc (Zn)		0.14%

Derived from Urea, Sulfur-Coated Urea, Methylene Ureas, Ammonium Phosphate, Sulfate of Potash, Muriate of Potash, Iron Sulfate, Calcium and Sodium Borate, Copper Oxide and Sulfate, Iron Oxide Sulfate and Frit, Manganese Oxide and Sulfate, Zinc Oxide and Sulfate.

* Slowly Available Water Soluble Nitrogen from Methylene Ureas.

1. Fertilizer shall be standard free flowing. Fertilizer shall be packaged in new, waterproof, non-overlaid bags clearly labeled as to weight, manufacturer and content.

2. Commercial Fertilizer for maintenance of sod and seed lawn areas during planting shall be the following proportions of N-P-K: 3N:1P:1K.

3. Application rate of nitrogen: 1 lb Actual N_2/1000 square feet

2.05 SOIL ADDITIVES

A. Soil additives for correction of pH and trace element deficiencies shall be factory labeled containers and approved prior to application.

2.06 LIME

A. Lime shall be dolomitic limestone containing not less than eighty-five (85) percent of total carbonates. Limestone shall be ground to such fineness that one hundred (100) percent will pass a No. 20 sieve.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas to receive sod and/or seeding for compliance with requirements and other conditions affecting performance. Verify finish grade is correct before beginning work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operation.

B. Loosen grade to a minimum depth of 2 inches. Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them offsite.

C. Finish Grading:
1. Finish grade is defined as the top surface of areas to receive seed or sod prior to the installation of seed or sod, unless otherwise noted on the Drawings.
2. Grade planting surface to a smooth, uniform surface plane with loose, uniformly fine texture. Grade, roll, rake to remove ridges and fill depressions, and meet finish grades. Re-grade just before sod/seed is installed to remove imperfections.
3. Finish grade in areas to receive sod shall be held 1 inch low, or the depth required, to account for the thickness of the sod.
4. Rake or otherwise remove surface debris and rocks larger than one (1) inch in diameter, finish grade within a tolerance of plus or minus 0.05 foot in ten (10) linear feet, and then compact to 85% density prior to installing seed or sod using method provided by contractor, such as lawn roller. Any portion of a partially buried rock that measures greater than or equal to 1" diameter which is visible at the surface must be removed. Pressing rocks into the soil mix is not acceptable.
5. Finish grading shall provide for surface drainage, cutting all necessary drainage swales.
6. Roll finished surface to compact finish grade.

D. Moisten prepared sod/seed bed to a minimum depth of 4 inches before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil or conditions that create wheel ruts for seed/sod application equipment.

E. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

F. Obtain approval of finish grade prior to installing sod or seed.

3.03 INSTALLATION

A. Seed / Sod Installation
1. The application rate for seed lawn areas shall be eight (8) pounds of seed per one thousand (1,000) square feet.
2. Hydroseeding application shall be screened to prevent oversprays onto pavements and adjacent surfaces, equipment, etc.
3. Hydroseeding application shall be made uniformly free of bare or thin spots and areas, and applied uniformly in two, opposing directions.
4. Sod shall be installed flat, true, and without holes, footprints, or other surface deformities.
5. Sod seams shall be butt tight and shall not show any sod soil, shall not be installed on top of other sod pieces, and shall exhibits a smooth, uniform surface free of humps, low spots, or holes. Sod netting shall be removed during installation.
6. Where sod abuts pavement or other hard surface, small strips or cut pieces of sod shall not be installed. Contractor shall use a full piece of sod and trim the abutting piece behind to fit.

3.04 30 DAY MAINTENANCE AND ESTABLISHMENT PERIOD

A. It is expressly understood that the Contractor will be responsible during the 30 maintenance and establishment period for normal landscape maintenance of the project. Maintenance of the seed and sod areas shall include, but not be limited to, watering, mowing, weeding, monitoring and treating any disease and/or pest-problems, cultivating and any other maintenance requirements (per standard trade practices) to keep the planting areas in a normal healthy growing condition.

B. Replace all sod and seed areas when plants are no longer in a satisfactory growing condition as determined by the Engineer for the duration of the guarantee period. Make replacements within seven (7) days of notification from the Engineer. Remove dead sod and seed areas within two (2) days of notification and mark planting plan showing the exact location of replaced areas.

C. The fertilization, watering, and maintenance requirements specified for seeding and sodding are the minimum requirements, and do not relieve the Contractor of the responsibility to provide acceptable installed sod. Contractor shall provide all additional fertilizer applications, waterings, mowings, and maintenance methods necessary beyond the minimum requirements specified in this Section to provide an acceptable stand of seed and/or sod at Contractor’s cost as part of the unit price.

D. Seed Establishment

1. Grow and maintain, including, but not limited to, watering, fertilization, mowing, and clean-up the seed for a period of thirty (30) working days until it has filled in to an acceptable condition.
2. Acceptable condition shall mean a full stand of grass, uniform in appearance, and free of weeds and/or other undesirable plant species as approved by the Engineer.
3. A full stand of seed is defined as a uniform grass cover with no bare spots over four square inches in area.
4. Apply a second full-rate application of fertilizer the three days prior to the first mowing.
5. Request the Engineer inspect the seed areas, determine acceptance, and if acceptable transfer responsibility of maintenance to the Owner.
6. Only after written acceptance of the seed areas by the Engineer, shall Contractor be eligible to be paid 100% of the seeding payment item.
7. If the Engineer finds any seed area unacceptable, the Contractor shall immediately repair the areas at Contractor's expense until the Engineer determines acceptance.

E. Sod Establishment:

1. Grow and maintain, including, but not limited to, watering, fertilization, mowing, and clean-up the sod for a period of thirty (30) working days until it has filled in to an acceptable condition.
2. Acceptable condition shall mean a full stand of grass, uniform in appearance, and free of weeds and/or other undesirable plant species as approved by the Engineer.
3. A full stand of sod is defined as a uniform grass cover with no bare spots.
4. Apply a second full-rate application of fertilizer three days prior to the first mowing.
5. Request the Engineer inspect the sod areas, determine acceptance, and if acceptable transfer responsibility of maintenance to the Owner.
6. Only after written acceptance of the sod areas by the Engineer, shall Contractor be eligible to be paid 100% of the seeding payment item.
7. If the Engineer finds any sod area unacceptable, the Contractor shall immediately repair the areas at Contractor's expense until the Engineer determines acceptance.

F. Required Tasks During the 30 Day Maintenance Period

1. Tasks shall include, but not be limited to mowing (three mowings minimum, and as many additional mowings as it takes to maintain seed and sod areas at 1-1/2 inch height without removing more than 1/3 blade height at any one mowing), edging, weed control, and watering as specified in Section 328400.
2. Application of a second full-rate application of fertilizer prior to first mowing.

G. Watering and Moisture Management

1. To encourage deep rooting, each watering shall be thorough enough to provide soil moisture a minimum of four (4) inches below soil surface. Permit soil to dry sufficiently between watering, but not so dry as to damage the seed or sod.
2. During the germination period for seeded areas, the plant bed shall be kept evenly moist at all times to a depth of 4 inches. To achieve this goal, it may be required to water areas more than once daily, depending upon weather conditions, during the germination period. Care shall be given to apply water at such a rate so as to not erode or wash away seed or sod.

3. Application rates and timing to achieve adequate moisture for active growth for seed and sod shall be solely the responsibility of the Contractor.
4. Daily inspections will be conducted by the Engineer during the germination period following application to verify the application of adequate amounts of water. Should inspection reveal that an adequate amount of moisture is not being supplied or evenly distributed to all the seeded and sodded areas, the Engineer will place the Contractor on notice that immediate applications of water be applied.
5. Daily inspections of sodded and seeded areas will be conducted by the Engineer during the 30-day Sod Maintenance Period. Should inspection reveal that an adequate amount of moisture is not being supplied or evenly distributed to all the seeded and sodded areas, the Engineer will place the Contractor on notice that immediate applications of water be applied and failure to do so will result in immediate suspension of the calendar day maintenance period. No additional compensation will be allowed the Contractor for these applications of water.
6. If the Contractor continues to fail to apply adequate moisture during the germination period for five (5) consecutive calendar days, the Engineer may declare the seeding and sod unacceptable. Within three (3) working days of notification, the Contractor will be required to reseed and resod areas that have not been kept properly moist to provide healthy, vigorous growth.

H. Owner's Recourse to Lack of, or Inadequate/Improper Maintenance

1. It is agreed that the City will suffer damage and be put to additional expense in the event that the Contractor does not perform maintenance duties as specified above, and as it may be difficult to accurately compute the amount of such damage, the Contractor hereby expressly covenants and agrees to the following maintenance performance measures:
   a) Weeding: The Engineer will issue the Contractor up to two written notices during the maintenance period to weed contract planting areas. Whereupon the Contractor shall have seven calendar days, per notice, to complete the weeding. If weeding is not performed after the second notice, the Engineer shall terminate the contract with the Contractor and contact the Contractor’s Bonding Company to perform the work for the rest of the maintenance period.
   b) Replacing Dead or Dying Seed or Sod: The Engineer will issue the Contractor up to two written notices during the maintenance period to replace dead or dying seed or sod . Whereupon the Contractor shall have seven calendar days, per notice, to replace the dead or dying grass. If grass replacement is not performed after the second notice, the Engineer shall terminate the contract with the Contractor and contact the Contractor’s Bonding Company to perform the work for the rest of the maintenance period.
   c) Regular watering: The Engineer will issue the Contractor up to two written notices during the maintenance period to water the contract plants. Whereupon the Contractor shall have three calendar days, per notice, to water contract plants. If plant irrigation is not performed after the second notice, the Engineer shall terminate the contract with the Contractor and contact the Contractor’s Bonding Company to perform the work for the rest of the maintenance period.

3.05 INSPECTION AND SUBSTANTIAL COMPLETION

A. After completion of all seed and sod installation and the 30 day maintenance period, the Engineer will review all areas for compliance.

B. Grassed areas without an acceptable, uniform stand of sod or seed, or areas damaged though any other cause prior to this inspection shall be re-grassed using the material specified for that area as herein specified at the Contractor's expense, and regrown, including specified maintenance, until an acceptable stand is achieved.

3.06 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

END OF SECTION 329200

SECTION 33 40 00
STORMWATER UTILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

The Work described in this Special Provision includes installing the stormwater conveyance piping and appurtenances to serve the park uses. Stormwater utility work in this section includes, but is not limited to, the following.

A. Construction of gravity storm sewer pipes, underdrain pipes, catch basins and cleanouts.

B. Trench excavation, pipe bedding, and bank run gravel backfill.

C. Stormwater Treatment devices.

D. Testing the built stormwater conveyance.

1.02 REFERENCES

A. Reference Standards – Current edition at date of bid:

1. Washington State Department of Transportation (WSDOT) / American Public Works Association (APWA)
    a. Standard Specifications for Road, Bridge, and Municipal Construction.
    b. Standard Plans for Road, Bridge, and Municipal Construction
2. Washington State Department of Ecology's Stormwater Management Manual for Western Washington
3. Longview Public Works Development Guidelines & Improvement Standards

1.03 SUBMITTALS

A. Submit manufacturer's literature and data for all pipe, fittings, castings, catch basins, and other manufactured products.

B. Submit gradations showing the percent passing, source, and sand equivalent for all aggregates.

PART 2 PRODUCTS

2.01 Materials

A. Storm sewer pipe shall meet the requirements of section 7-04 of the WSDOT Standard Specifications.

B. Cast Iron fittings shall conform to ASTM A888

C. Catch basins shall meet the requirements of section 7-05 of the WSDOT Standard Specifications.

D. Detectable Marking Tape shall meet the requirements of section 9-15.18 of the WSDOT Standard Specifications.

E. Pipe zone bedding shall meet the requirements of section 9-03.12(3) of the WSDOT Standard Specifications.

F. Bank run gravel for trench backfill shall meet the requirements of section 9-03.15 outside of paved areas or 9-03.19 beneath pavement.

PART 3 EXECUTION

3.01 PREPARATION

A. All temporary erosion and sediment control measures shall be in place prior to land disturbance.

3.02 TRENCHING AND EXCAVATION

A. Trenching and excavation for the stormwater conveyance components shall be done in accordance with sections 7-05.3 and 7-08.3 of the WSDOT Standard Specifications.

3.03 PIPE INSTALLATION

A. Installation of the stormwater conveyance components shall be done in accordance with sections 7-08.3 of the WSDOT Standard Specifications.

3.04 CLEANING AND TESTING

A. Cleaning and testing of the stormwater conveyance components shall be done in accordance with sections 7-04.3(1) of the WSDOT Standard Specifications.

END OF SECTION