

September 24, 2026 – BID ISSUE

Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS, & CHS

Devon Elementary School

*400 S. Fairfield Road
Devon, PA 19333*

New Eagle Elementary School

*507 Pugh Road
Wayne, PA 19087*

Valley Forge Elementary School

*99 Walker Road
Wayne, PA 19087*

Tredyffrin/Easttown Middle School

*801 Conestoga Road
Berwyn, PA 19312*

Valley Forge Middle School

*105 W. Walker Road
Wayne, PA 19087*

Conestoga High School

*200 Irish Road
Berwyn, PA 19312*

For the

Tredyffrin / Easttown School District

940 West Valley Road, Suite 1700, Wayne, Pennsylvania, 19087 t 620 240 1900

SPECIFICATIONS

HSA Project No. 26-016.02

Pennoni Associates, Inc.

Consulting Site Civil Engineers

One Church Street Suite 220, West Chester, Pennsylvania 19382

t 610 429-8907 f 215 345 7853

Joseph B. Callaghan Inc.

Facade Engineers

One Penn Center, 1617 JFK Blvd, Suite 1655 Philadelphia, Pennsylvania 19103

t 215 665 0497



Heckendorn Shiles Architects

347 E Conestoga Rd, Wayne, Pennsylvania 19087 t 610 994 3500

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Division 0/1 ITEM

NOTICE TO BIDDERS
INSTRUCTIONS TO BIDDERS

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NON-COLLUSION AFFIDAVIT
CONTRACTORS QUALIFICATION STATEMENT

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PREVAILING MINIMUM WAGE DETERMINATIONS – VFMS
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GENERAL REQUIREMENTS
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014000 QUALITY REQUIREMENTS
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030130 CONCRETE REHABILITATION
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096519 RESILIENT TILE FLOORING
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096813 TILE CARPETING
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099113 EXTERIOR PAINTING
099723 FAÇADE COATING

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123661 SOLID SURFACING COUNTERTOPS
126100 FIXED AUDIENCE SEATING

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321723 PAVEMENT MARKINGS

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NOTICE TO BIDDERS

Bid Package 2 – Interior/Exterior Renovations and Upgrades at Devon Elementary School (DES), New Eagle Elementary School (NEES), Valley Forge Elementary School (VFES), Tredyffrin/Easttown Middle School (TEMS), Valley Forge Middle School (VFMS), and Conestoga High School (CHS) for the **Tredyffrin/Easttown School District**

Bids will be received electronically before **2:00 P.M., Wednesday, October 28, 2026, at which time the bids will be opened on the PennBid website with results displayed publicly.** The results will be also read aloud at the offices of the Purchasing Department, Tredyffrin/Easttown School District, Administration Offices, 940 W Valley Road, Suite 1700 Wayne, PA 19087.

Contract
General Construction

Proposal Guaranty
10%

Sets of Plans, Specifications, and other documents constituting the Contract Documents may be obtained at no cost on the PennBid website, www.PennBid.net. Plans and specifications will be available **September 24, 2026**.

Each proposal must be accompanied by a proposal guaranty, in the amount above stipulated, in the form of a certified check, bank cashier's check, trust company treasurer's check or a bid bond, in the form prescribed in the Contract Documents, with satisfactory corporate surety authorized to do business in Pennsylvania, naming as payee (or obligee as applicable) the Tredyffrin/Easttown School District.

Acceptance by the Owner of the successful bidder's proposal shall be in the form of a contingent Notice of Award. Upon receipt of such Notice of Award, the successful bidder must furnish, 1) Contract Bonds in the forms prescribed in the Contract Documents; 2) evidence of required insurance as detailed in the Contract Documents; and 3) a signed and notarized Form of Agreement in the form provided in the Contract Documents, all prior to receiving a Notice to Proceed.

Proposals must be submitted electronically via the PennBid website.

Except as expressly provided for in these specifications, no proposals may be withdrawn for a period of sixty (60) days after the date specified for receiving, opening, and reading of proposals.

The time allowed for completion shall be as set forth in the Contract Documents. All Contracts will start immediately.

The Tredyffrin/Easttown School District reserves the right to reject any or all proposals or parts thereof or items therein and to waive any defects or irregularities in proposals.

A mandatory Pre-Bid Meeting (project walk-through) will be held on Thursday, October 1, 2026, at 8:30 A.M. at Conestoga High School, large group room 268, 200 Irish Road, Berwyn, PA 19312.

Contractors who do not attend the mandatory pre-bid meeting will not be permitted to submit bids.

Tredyffrin/Easttown School District
Arthur J. McDonnell
Business Manager

Heckendorn Shiles Architects
Matthew A Heckendorn
Principal

INSTRUCTIONS TO BIDDERS

BID PACKAGE 2 – INTERIOR/EXTERIOR RENOVATIONS AND UPGRADES AT DEVON ELEMENTARY SCHOOL (DES), NEW EAGLE ELEMENTARY SCHOOL (NEES), VALLEY FORGE ELEMENTARY SCHOOL (VFES), TREDYFFRIN/EASTTOWN MIDDLE SCHOOL (TEMS), VALLEY FORGE MIDDLE SCHOOL (VFMS), AND CONESTOGA HIGH SCHOOL (CHS)

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SECTION 1 - RECEIVING, OPENING, AND READING OF PROPOSALS

- A. Proposals will be received for the following project:

Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS, & CHS

by the Tredyffrin/Easttown School District, at the Administration Office, 940 West Valley Road, Suite 1700, Wayne, PA 19087.

Proposals will be accepted up to **2:00 pm, October 28, 2026.**

The bids will be unsealed electronically via the PennBid website, and also will be read aloud at **2:00 pm, October 28, 2026.**

B. Sealed proposals will be received for the following contracts:

General Construction: This proposal will include all labor, equipment and materials to complete all of the General Construction work contained in the Contract Documents. The General Contractor shall also be responsible as the Prime Coordinator on this project. In that role, he shall be responsible to coordinate activities of all Prime Contractors so that the construction schedule is maintained. See also specification Section 01041.

C. A **mandatory Pre-Bid Meeting** (project walk-through) will be held on **Thursday, October 1, 2026, at 8:30 A.M.** at Conestoga High School, large group room 268, 200 Irish Road, Berwyn, PA 19312.

D. Contractors will be responsible for notifying the Owner/Architect, before bids are submitted, of any discrepancies in the Drawings and/or Contract Documents which would require additional work not included in the base bid or alternate descriptions. Contractors' bids are an affirmative statement by the contractors that any and all questions or discrepancies have been addressed to the contractors' satisfaction pursuant to the terms of Section 10 of these Instructions to Bidders.

1. Questions, substitution requests, and requests for clarification or interpretations of the Bid Documents shall be made in writing and must be submitted by **3:30pm, Friday, October 9, 2026.**

SECTION 2 - PREPARATION OF PROPOSALS

A. Bound herewith is a complete set of bidding forms and Contract Documents. Any Addenda or Bulletins which are promulgated prior to the bid due date shall also be made part of the Contract Documents.

B. No proposal will be considered, which is submitted other than upon the Bid Form through PennBid.

C. The Bidder shall sign and complete the proposal properly in accordance with the following:

1. If the Bidder is an individual, the proposal shall be executed by such individual, personally, such individual's signature shall be witnessed, such individual's business address and phone number shall be stated, and any trade name employed in the conduct of such individual's business shall be stated.
2. If the Bidder is a corporation, the proposal shall be executed in its name and in its behalf: 1) by the President or a Vice-President and attested by the Secretary or an Assistant Secretary and the corporate seal shall be attached; or 2) by a duly authorized agent of the corporation whose authority to act, as of the date of the proposal, shall be established by proof, in a form satisfactory to the Owner, submitted with the proposal. The business address of the corporation shall be stated, the state of incorporation shall be stated, and, if the corporation is a foreign corporation, whether the corporations is registered to do business in Pennsylvania shall be stated.
3. If the Bidder is a partnership, the proposal shall be executed and sealed in the name of the partnership, followed by the signature of a general partner, together with a certification from each general partner that the general partner executing the proposal has been authorized by the partnership to execute and deliver the bid. The business address of the partnership shall be stated, the state of registration shall be stated, if any, and any trade name employed by the partnership in the conduct of its business shall be stated.

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- D. All blank spaces in the Bid Form (as incorporated on PennBid) shall be completed. All amounts stated in the proposal shall be stated. Failure to complete all blank spaces in the Bid Form renders such a bid incomplete and such a bid may be rejected by the Owner as non-responsive.
- E. Each proposal shall be based upon the plans, Specifications, and other documents constituting the Contract Documents referred to in the Notice to Bidders bound herewith, including related drawings, bulletins, and addenda.
 - 1. Any proposal which contains omissions, additions, or deductions not called for or permitted, alterations of form, conditional of uninvited alternate proposals or irregularities of any kind, and any proposal which is not based upon the documents referred to in the preceding paragraph. Furthermore any proposal which, while otherwise regular in form, shall not be accompanied by the proper proposal guaranty as set forth in Section 4, may be rejected by the Owner as being informal.
 - 2. The Owner may reject any proposal in which prices are obviously unrealistic.
- F. Proposals shall not contain any recapitulations of the work to be performed.
- G. Erasures, alterations, or changes made by the Bidder in the completion of the proposal shall be explained or noted appropriately with the signature of the Bidder. These proposals may, at the discretion of the Owner, be rejected.
- H. Attached in the specifications is a copy of the AIA Contractors Qualification Statement. This statement must be completed for each **Contractor**. It will be required that the Contractor retain craftsmen skilled to perform the work.
 - 1. Each Prime Contractor must have been in business for at least five years.
 - 2. Each Prime Contractor must have successfully completed at least four comparable size projects in the past five years. The Contractor must have proven experience doing similar type facilities.
- J. All contractors are required to have an 'A-' (A minus) or better bond rating at the time of the bid submission, as determined by AM Best.

SECTION 3 - SUBMISSIONS OF PROPOSALS

- A. Each proposal, accompanied by proposal guaranty as set forth in Section 4, shall be submitted electronically via PennBid.

SECTION 4 - PROPOSAL GUARANTY

- A. Each proposal must be accompanied by the proposal guaranty, in the amount of ten (10%) percent of the greatest possible contract amount. The proposal guaranty shall be in the form of a certified check, bank cashier's check, trust company's treasurer's check or a bid bond, in the form bound herewith, with corporate surety authorized to do business in Pennsylvania and satisfactory to the Owner. The proposal guaranty shall name the Owner as payee or obligee, as applicable.
- B. The form of Bid Bond is furnished herewith for the use of the Bidder. In the event that a bid bond is submitted with the proposal, the Bidder shall make certain that a proper power of attorney evidencing the authority of the agent of the surety to execute the bid bond is submitted therewith.

Proposal guaranty shall be submitted upon the understanding that the same shall guarantee that if a Bidder, to whom ten (10) calendar days' notice of intention to accept such Bidder's proposal has been made by or on behalf of the Owner, fails to furnish a performance bond and a payment bond in the forms furnished herewith to the Owner, as are required by the law of the Commonwealth of Pennsylvania, as a condition precedent to formal award of the contract and fails to execute the Agreement or to furnish the required

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insurance certificates within ten (10) days after notice that an award has been made to such Bidder, the Owner may, in its sole discretion, declare the Bidder to be in default with respect to such Bidder's proposal.

1. In the event that any Bidder shall be declared to be in default with respect to such Bidder's proposal, as provided for above, the Owner may declare such proposal guaranty to be forfeited to the Owner as liquidated damages.
 2. With respect to the discovery of inaccurate or incomplete information provided in the Bidder's proposal documents, the Owner shall have the right to declare the Bidder's proposal to be in default, even if the 60 day period, beyond the date for opening of bids for acceptance of the Bidder's proposal, has lapsed. In the event of such default, the Owner shall also have the right to retain the defaulted Bidder's Bid Bond. See also, Section 6 in these Instructions to Bidders.
- C. The proposal guaranty accompanying the proposal, of all Bidders of each contract who have submitted acceptable bids, will be held by the Owner until two days following the execution of an agreement with the successful Bidder. If the Owner decides that no award will be made, then the proposal guaranty will be returned two days following the decision. In any event, the proposal guaranty need not remain valid beyond a point two days after the expiration date for the proposal.
- D. The Owner shall not be liable for interest upon the proposal guaranty accompanying any proposal, which is in the form of a check, for the period during which such proposal guaranty is held under Section 4.
- E. The proposal shall hold good for sixty days from the date of submission of bids.
- F. If contractor submits a bid on more than one prime contract, separate proposal guaranties are required for each prime contract.

SECTION 5 - WITHDRAWAL OF BIDS

- A. Any Bidder may, in writing, withdraw such Bidder's proposal within two (2) business days after the opening of bids and in accordance with the Title 73 PS 1602.

SECTION 6 - AWARD OF CONTRACT OR REJECTION OF PROPOSALS

- A. An award by the Owner, if made, will be made to the lowest responsible Bidder within sixty (60) days after the opening of the bids or as defined in Title 73 PS 1622.
- B. The Owner reserves the right to reject any or all proposals or parts thereof or items therein and to waive any defects or irregularities in proposals.
- C. The Owner reserves the right to consider such matters, facts, and circumstances as shall be permitted by Pennsylvania law in making a determination of whether a Bidder is a responsible Bidder.
- D. The Owner, before making an award, may require any Bidder, upon at least three (3) days request, to present evidence, in form to be specified by the Owner, of such Bidder's experience, qualifications, financial ability, and other matters reasonably related to such Bidder's ability to perform and complete the work covered by such Bidder's proposal. Attached is an AIA 305 Contractor's Qualification Statement, to be completed in its entirety.
- E. The Owner, except to the extent required by Pennsylvania law, shall not be obligated to make an award, if an award is to be made, to the lowest Bidder, or to any other Bidder.
- F. The work to be done under the Contract for which bids are invited is public work which is subject to various qualifications and restrictions. It is therefore expressly understood and agreed to by each Bidder

(Contractor) that, notwithstanding any other provisions of the Contract Documents, the Owner may at any time cancel any award made by it or cancel any contract entered into with the Bidder, without liability to the Bidder, at any time before the Bidder has been directed to begin, and has not actually begun work under the Contract. The Bidder shall have the right similarly to cancel the contract without further obligation, if such Bidder has not received notice to proceed within sixty days following such Bidder's tender of executed Contract Documents in satisfactory form, but only upon such Bidder's giving fifteen days' prior written notice to the Owner, and the Architect, by registered mail, of such Bidder's intentions to exercise such right if notice to proceed is not given by the expiration of the sixty day period.

SECTION 7 - CONTRACT BONDS & OTHER PRE-CONTRACT REQUIREMENTS

- A. Before any contract is awarded to the Contractor for the contemplated work, the Bidder, when notified at the address set forth in such proposal, shall furnish and pay for contract bonds, in the forms bound herewith, and in accordance with Sections 756 and 757 of the Public School Code of 1949, as amended, and the Public Works Contractors Bond Law of 1967, of the Commonwealth of Pennsylvania, conditioned as follows:
1. For faithful performance and maintenance of the contract as designated in the **Performance Bond** for a period of two years following final completion of all portions of the work.
 2. For payment of laborers and materialmen as designated in the **Labor and Material Payment Bond**.
- B. The stated principal amounts applicable to the Contract Bond required under Section 7, shall be as follows:
1. For **Labor and Material Payment Bond**, One-Hundred (100%) percent of the amount of the award.
 2. For **Performance Bond**, One-Hundred (100%) percent of the amount of the award.
- C. The Contract Bonds required in Section 7 shall have as surety thereon a corporation duly authorized to conduct business in Pennsylvania which is satisfactory to the Owner. **The bonds shall be provided by a surety with an A.M. Best rating of "A-" (A minus) or better.**
- D. The Contract Bonds required in Section 7, shall be executed by or on behalf of the successful Bidder, as principal, in the following manner:
1. If the successful Bidder is an individual, the Contract Bonds shall be executed by such Bidder, personally; such Bidder's signature shall be witnessed and any trade name employed in the conduct of business shall be stated.
 2. If the successful Bidder is a partnership, the Contract Bonds shall be executed, in the name of the partnership, by each of the partners and the signature of the partners shall be witnessed.
 3. If the successful Bidder is a corporation, the Contract Bonds shall be executed in the name of the corporation: (1) by the president or vice-president and attested by the secretary or assistant secretary, and the corporate seal shall be attached; or (2) by a duly authorized agent of the corporation whose authority to act, as of the date of the Contract Bonds, shall be established by proof satisfactory to the Owner, attached to the Contract Bonds.
- E. The Contract Bonds required in Section 7, shall be executed in behalf of the surety in such manner as shall legally bind the surety. Proper power of attorney evidencing the authority of such agent or agents shall be attached to the Contract Bonds. Such power of attorney shall bear the same date as the Contract Bonds to, which it is attached.
- F. The Contractor shall comply with the Public Works Employment Verification Act and, as a precondition of the Contract, shall submit the Public Works Employment Verification Form to the District along with its bonds, insurance certificates and form of contract. This form is available through the Pennsylvania State website at:

<https://www.dgs.pa.gov/Businesses/Materials%20and%20Services%20Procurement/Public-Works-Employment-Verification/Documents/Public%20Works%20Employment%20Verification%20Form.pdf>

Use the above link for 'Public Works Employment Verification Form'.

SECTION 8 - EXECUTION OF CONTRACT & COMMENCEMENT OF WORK

- A. The successful Bidder to whom an award shall be made by the Owner will be notified in writing of the award, which notice of the award shall be directed to such successful Bidder at the address appearing in such Bidder's proposal. However, in accordance with the Public Works Contractors' Bond Law of 1967, of the Commonwealth of Pennsylvania, the Bidder will be required to furnish the specified Contract Bonds on the forms bound herewith prior to receiving the award. Bonds will become binding upon the award of the Contract.
- B. Within ten (10) days of delivery of the notice of award to any successful Bidder as provided in Section 8, the successful Bidder shall execute and deliver to the Owner the Agreement in the form furnished by the Owner and shall deliver to the Owner proper evidence of the effectiveness of insurance coverage required by the Supplementary General Conditions bound herewith.
- C. Failure of the Bidder to furnish Contract Bonds in accordance with the Contract Documents and to comply with Section 8, or within such extension of time, if any, as provided for by the Owner, in its sole discretion, shall constitute a default by the Bidder under the proposal. The Owner thereafter either may make an award to the next lowest responsible Bidder, to be determined by the Owner in its sole discretion or advertise for new proposals and make an award on the basis thereof. The Owner may charge against such initial Bidder the difference between the amount of the proposal, as accepted by the Owner, and any higher amount for which the required work shall be contracted for by the Owner, together with any additional advertising costs, architect's fees, legal fees, and any and all other fees and expenses incurred by the Owner as a result of such default by the Bidder. These charges shall be irrespective of whether such difference shall exceed the amount of proposal guaranty submitted with the proposal.
- D. The Agreement referred to in Section 8, shall be executed by or on behalf of the successful Bidder in the same manner as is provided in Section 7, with respect to the Contract Bonds.
- E. Commencement of the Work: The successful Bidder, upon notice to proceed by the Owner shall immediately begin to generate shop drawings, submittals and ordering materials due to the nature of the school schedule and the construction schedule.

The intent of the District is to award the contract in late November 2026 with an anticipated site mobilization of June 21, 2027. This long lag-time is designed to provide adequate opportunity for the Contractor to process, order and receive all materials for the work in advance of the mobilization date.

SECTION 9 - NOT USED

SECTION 10 - RESPONSIBILITY OF BIDDER

- A. Each Bidder before submitting a proposal, shall visit the site of the proposed work and shall be held responsible for having observed and ascertained all visible conditions, which may be encountered in the performance of the work, inter alia, location, general conditions and terrain, accessibility, existing objects and structures, the character and extent of work, if any, then in progress, conditions with respect to adjacent properties and the nature of the neighborhood. Likewise, before submitting a proposal, the Bidder shall become familiar, to the extent possible, with labor conditions, which may affect the performance of the work.

- B. The submission by any Bidder of a proposal shall constitute conclusive evidence of compliance by such Bidder with Section 10. Any claims at any future time for labor, equipment or materials required, or for difficulties encountered, which could have been foreseen had the Bidder so complied with Section 10, will not be recognized by the Owner.
- C. Each Bidder shall carefully examine all documents and materials bound herewith or related hereto, together with all appropriate bulletins or addends. Such documents shall include, inter alia, the Notice to Bidders, these Instructions to Bidders, the Bid Form (as incorporated on PennBid), the Form of Bid Bond, the Forms of Contract Bonds, the Description of Alternates, the General Conditions, the Supplementary General Conditions, the Drawings, the Technical Specifications, and appropriate Bulletins or Addenda. The submission by any Bidder of a proposal shall constitute conclusive evidence that the Bidder has become satisfied as to the conditions to be encountered, as to the character, quality and quantities of work to be performed and materials to be furnished and as to the requirements of the documents hereinbefore mentioned in this Paragraph C; and no allowance or concession will be made by the Owner, at any time, for lack of such information on the part of the Bidder if that Bidder's proposal subsequently shall be accepted by the Owner.

SECTION 11 - CHANGE PRIOR TO OPENING OF PROPOSALS

- A. During the period allowed for the preparations of bids, the Architect may furnish to prospective Bidders bulletins or addenda setting forth additions to or alterations of the Contract Documents. The Bidder in the computation of such Bidder's proposal shall include the additions or alterations. The bulletins or addenda shall become a part of the Contract Documents.
- B. It shall be the duty of each prospective Bidder (and any of such Bidder's subcontractors) to ascertain what bulletins and/or addenda, if any, have been promulgated by the Architect which may affect the work to be covered by the proposal of such prospective Bidder and to incorporate that work into the bid.
- C. If any prospective Bidder shall be in doubt as to the true meaning or intent of any part of the Contract Documents, the Bidder may submit a request, in writing, for an interpretation. Any request for such an interpretation shall be delivered to the Architect at least six (6) days prior to the date fixed in the Notice to Bidders bound herewith as the date fixed for receiving, opening, and reading proposals. Any such interpretation will be made only by a bulletin or addenda promulgated by the Architect as provided in Section 11.
- D. The Owner and the Architect shall not be responsible for explanation or interpretations other than contained in bulletins or addenda promulgated as provided in this Section 11. Oral interpretations or explanations shall not be binding upon the Owner or Architect.
- E. Failure of any Bidder to receive any bulletin or addenda as provided for in this Section 11 shall not relieve such Bidder from the obligation of such Bidder's proposal.
- F. Any addenda promulgated by the Architect will be acknowledged, by the Bidder, in the appropriate place on the Bid Form (as incorporated on PennBid)

SECTION 12 - TIME OF COMPLETION: EXTENSIONS OF TIME

- A. The work to be performed shall be commenced by the Contractor, to the extent possible, as covered in the Contract Documents, within ten (10) days after delivery of a notice to proceed, in writing, by the Owner or the Architect. The nature of the project is such that the time shall be critical. The Prime Contractors and all sub-contractors shall cooperate with each other and shall coordinate their activities and work so that the entire program of construction can be completed on or before **August 18, 2027**.

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1. **NOTE:** Contractors are notified that any work that occurs on or after August 18, 2027, including scheduled work and regardless of the reason, shall be performed on **Second Shift**, and between the hours of 3:30 pm and 11:00 pm, or third shift at no additional cost to the Owner.

SECTION 13 - DOCUMENTS

- A. Sets of plans, Specifications, and other documents constituting the Contract Documents and requirements for bidding may be obtained at no cost on PennBid.
- B. Any contractor with whom the Owner shall enter into a contract shall be entitled to receive a digital PDF set of plans, Specifications and other documents constituting the Contract Documents related to the work to be performed under such contract, without charge.
- C. All plans, Specifications, and other documents constituting the Contract Documents are the property of the Architect and must be returned.
- D. The Contract Documents furnished to the Bidders are as follows:
 1. Specifications: Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS, & CHS - Specifications
 2. Drawings are as follows:
 - See Sheet A001 on Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES
 - See Sheet A001 on Bid Package 2 - Interior/Exterior Renovations and Upgrades at NEES
 - See Sheet A001 on Bid Package 2 - Interior/Exterior Renovations and Upgrades at TEMS
 - See Sheet A001 on Bid Package 2 - Interior/Exterior Renovations and Upgrades at VFMS
 - See Sheet A001 on Bid Package 2 - Interior/Exterior Renovations and Upgrades at CHS

SECTION 14 -INSPECTIONS & TESTING

- A. The Owner will engage testing agencies. Each Prime Contractor is required to coordinate with Inspection agencies.
- B. Refer to General Requirements Section 10 for additional information.

SECTION 15 - INSURANCE

- A. Reference is made to the Supplementary General Conditions bound herewith for provisions relating to public liability, property damage, workmen's compensation, fire and extended coverage and other insurance which shall be provided and maintained during the period of performance under the Contract. The Contractor shall comply with applicable requirements before commencing any work under the Contract, and, as proof of such compliance, shall deliver to the Owner proper certificates or memoranda.

SECTION 16 - SUBSTITUTIONS

- A. All proposals must be based upon equipment and materials as specified or drawn, see Section 23 - Standard of Quality, in this Instructions to Bidders.
- B. If a Bidder wishes to substitute an alternative material or product other than that specified or drawn, the Bidder must adhere to the following:
 1. Any requested substitution must be submitted to the Architect by the deadline note in Section 1, so the substitution can be reviewed, and the appropriate notification can be made to all other bidders.
 2. All proposed substitutions must state the product to be substituted and where in the project it will be furnished. The proposed product literature, drawings, specifications and documents must

- contain the **comparable information** as was listed in the Specifications and Drawings for the product required by the Contract Documents. This is to enable a direct comparison to the specified product.
3. The Bidder bears the responsibility to furnish the same information as is provided in the Contract Documents. If the information is found to be unclear by the Architect, the Bidder will be required to furnish a sample by the deadline note in Section 1.
 4. The Bidder must also provide a list of installations where the proposed product was used, in a similar installation to this project by the deadline note in Section 1.
- C. It should be understood that the above requirements are to clarify, prior to the time of bidding, whether the proposed alternative is in fact equal to that specified. This process is also intended to allow enough time for the other bidders to be notified of any additionally accepted items. If the above conditions are not met the Bidder will be responsible to furnish the specified items.

SECTION 17 - DETAILED COST BREAKDOWN

- A. The Contractor, within ten days of the notice of award, shall submit to the Architect for approval a detailed cost breakdown, utilizing AIA Document G703-1992, the total of which shall equal the full amount of the contract (including materials, labor, overhead & profit). Failure of the Contractor to submit an approved, detailed cost breakdown, in the time stated above, will result in withheld payments on requisitions.
1. Such breakdown shall separate, for each product or material, the cost for material from the cost for labor.

SECTION 18 - COMPETENT WORKMEN

- A. According to Section 752 of the Public School Code of 1949, no person shall be employed to do work under such Contract except competent and first class workmen and mechanics.
1. No workmen shall be regarded as competent first class, within the meaning of this Act, except those who are duly skilled in their respective branches of labor, and who shall be paid not less than such rates of wages and for such hours work as shall be established and current rates of wages paid for such hours by employers of organized labor in doing of similar work in the district where work is being done.

SECTION 19 - PAYMENTS

- A. Reference is made to the General and Supplementary General Conditions bound herewith for provisions with respect to payments to contractor.
- B. Application for Payment Forms: Contractors must utilize AIA Document G702-1992 and G703-1992 as form for Applications for Payment.
- C. Draft Application for Payment ("Pencil Copy") G702 and G703 to be submitted by the 25th day of the month, projecting through the end of the month, for review by the Architect. Upon approval of Draft, Contractors may submit notarized application and additional required documentation.

SECTION 20 - OCCUPATIONAL SAFETY AND HEALTH ACT REQUIREMENTS

- A. The contractors shall comply with all requirements of the Occupational Safety and Health Act of 1970 (OSHA), along with any amendments thereto.

**SECTION 21 - PROVISIONS FOR THE USE OF STEEL AND STEEL PRODUCTS
MADE IN THE U.S.A.**

- A. In accordance with Act 3 of the 1978 General Assembly of the Commonwealth of Pennsylvania, if any steel or steel products are to be used or supplied in the performance of the Contract, only those produced in the United States of America as defined therein shall be used or supplied in the performance of the Contract or by any subcontractors thereunder.
- B. In accordance with Act 161 of 1982, cast iron products shall also be included and produced in the United States of America. Act 141 of 1984, further defines "steel products" to include machinery and equipment. The act also provides clarifications and penalties.
- C. Written and verifiable confirmation of compliance with the requirements of this Section must be furnished to the Architect upon request.

SECTION 22 - HUMAN RELATIONS ACT

- A. The provisions of the Pennsylvania Human Relations Act, Act 222 of October 27, 1955 (P.L. 744) (43 P.S. Section 951, et. seq.) of the Commonwealth of Pennsylvania prohibit discrimination because of race, color, religious creed, ancestry, age, sex, national origin, handicap or disability, by employers, employment agencies, labor organizations, contractors and others. The Contractor shall agree to comply with the provisions of this Act, as amended, that is made part of this Specification. Attention is directed to the language of the Commonwealth's non-discrimination clause in 16 PA. Code 49.101.

SECTION 23 - STANDARD OF QUALITY

- A. The various materials and products specified in this Specifications by name or description are given to establish a standard of quality and of cost for bid purposes. It is not the intent to limit the bidder, the bid, or the evaluation of the bid to any one material or product specified, but rather to name or describe it as the absolute minimum standard that is desired or acceptable. Where proprietary names are used, whether or not followed by the words "or alternatives of the quality necessary to meet the specifications", they shall be subject only as approved by the Architect. A bid containing an alternative which does not meet the specifications may be declared non-responsive. A bid containing an alternative may be accepted but, if an award is made to that bidder, the bidder will be required to replace any alternatives which do not meet the specifications. See Section 16- Substitutions, of these Instructions to Bidders.

SECTION 24 - REQUIREMENTS OF ANTI-POLLUTION LEGISLATION

- A. On October 26, 1972, House Bill number 1969 was enacted into law. This Act (No. 247) became effective on November 25, 1972. It requires that Bidders on construction contracts for the Commonwealth of Pennsylvania be advised of those provisions of Federal and State statutes' rules and regulations dealing with the prevention of environmental pollution and the preservation of public natural resources that affect the project on which bids are being received.
- B. The Bidder shall become thoroughly acquainted with the terms of the statutes, rules, and regulations enumerated in this notice, and shall, in such Bidder's bid, price all costs of complying with the terms of the listed statutes, rules, and regulations. No separate or additional payment will be made for such compliance. In the event that the listed statutes, rules, and regulations are amended, or if new statutes, rules, and regulations become effective, after date of receipt of bids, upon the receipt of documentation which causes the Contractor to perform additional work, the Owner may issue a change order request setting forth the additional work that must be undertaken. This change order request shall not invalidate the contract.

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- C. It is the responsibility of each contractor to determine what local ordinances, if any, will affect the work. The Contractor shall check for any county, city, borough, or township rules or regulations applicable to the area in which the project is being constructed, and in addition, for any rules or regulations of other organizations having jurisdiction, such as chambers of commerce, planning commissions, industries, or utility companies who have jurisdiction over lands which the Contractor occupies. Any costs of compliance with local controls shall be included in the prices bid, even though documents of such local controlling agencies are not listed herein. Each contractor is hereby directed to comply with all applicable Federal, local, and Pennsylvania statutes and regulations administered by the Department of Environmental Resources.

SECTION 25 - PENNSYLVANIA PREVAILING WAGE RATES

- A. This regulation and the general Pennsylvania prevailing minimum wage rates, (Act 422 of 1961, P.L. 987, amended), as determined by the Secretary of Labor and Industry, which shall be paid for each craft or classification of all workers needed to perform the Contract during the anticipated term therefor in the locality in which public work is performed, are made part of this Specification.
- B. Published rates for this Work are bound into this Specification. All questions regarding wage rates, classifications and documentation shall be directed to the Prevailing Wage Division, **717-705-5969**, or **800-932-0665**.

SECTION 26 - ASBESTOS & LEAD

- A. No A.C.B.M. (asbestos-containing building materials) or A.C.M. (asbestos-containing materials) will be permitted to be used for the construction of this project.
- B. No lead based pipes, solder, or paint shall be used.

SECTION 27 - APPLICATION BACKGROUND CHECKS REQUIRED BY ACT 34.F 1985, ACT 151 1994, ACT 114 2006, AND PDE

- A. All persons working on a regular basis at the project will be required to submit proof of satisfactory Pennsylvania and FBI criminal background checks required by Section 111 of the Pennsylvania Public School Code. Satisfactory certifications/clearances must be dated no earlier than one year prior to the date presented to the District and **are required before workers are permitted on site**. Costs to obtain these clearances will be paid by the Contractor.
1. Procedures for obtaining the FBI Federal criminal history report can be found at:
<http://www.identogo.com>
- For Act 114, Contractors **MUST** select the PDE clearance (PA Department of Education). Contractors must submit proof of application within 5 days of Award of Bid.
- B. Satisfactory clearances required by Act 34.F of 1985 Criminal Record Check, and by Act 151 of 1994 Child/Student Abuse Reporting/Clearance, which amended the Department of Welfare's Child Protective Services Law, must be submitted by the Prime Contractor. Contractors must comply with both Act 34.F and Act 151, and supply background checks on all personnel, including sub-contractors and their employees. Satisfactory clearances must be dated no earlier than one year prior to the date presented to the District and **are required before workers are permitted on site**. Costs to obtain these clearances will be paid by the Contractor. Contractors shall note that clearances for Pennsylvania Clearances can take up to 4 weeks to obtain.

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1. Procedures for obtaining the Pennsylvania criminal background check (Act 34.F) can be found at:
<http://epatch.state.pa.us/Home.jsp>
 2. Procedures for obtaining the child abuse clearance (Act 151) can be found at:
<http://www.compass.state.pa.us/CWIS>
- C. In addition, all persons working on the project will be required to sign form PDE-6004 (9/1/2011), ARREST CONVICTION AND CERTIFICATION FORM (Act 24). The signed form must be sent to the school district with the above three clearances. Furthermore, Form PDE-6004 must be re-submitted to report any new arrest or conviction for any of the prohibited offenses listed on the form within seventy-two (72) hours of an arrest or conviction.
1. Procedures for obtaining the arrest conviction and certification form (Act 24) can be found at:
<http://www.education.pa.gov/Documents/Teachers-Administrators/Background%20Checks/Arrest%20or%20Conviction%20form.pdf>

SECTION 28 - LIQUIDATED DAMAGES

- A. Each Contractor shall be liable, and shall pay to the Owner as fixed, agreed, and liquidated damages, the following sums for each calendar day (Sundays and holidays included), which the actual time of Final completion shall be delayed beyond the time for Final completion set forth in Section 12 of these Instructions to Bidders.

Contract	Damages/Day
General Construction	\$ 1,000.00
Site Mobilization:	June 21, 2027
Project Final Completion:	August 18, 2027

SECTION 29 - CASH ALLOWANCES

- A. No cash allowances for any purposes are included in the Specifications of this project.

SECTION 30 - PENNSYLVANIA SALES TAX EXEMPTION ARTICLE 22 - STATE SALES TAX

- A. The Owner is exempt (excluded) from sales or use tax in Pennsylvania on certain transactions. The Contractor and all subcontractors shall bid and shall purchase as exempt (excluded) from Pennsylvania sales and use tax all tangible personal property within the definition of "building machinery and equipment" as that term is defined in Act No. 45-1998, Exhibit "A" below and made a part hereof is a true and correct copy of that portion of such Act, which defines the term "building machinery and equipment." In order to facilitate such purchases free of sales and use tax in Pennsylvania, the Owner agrees to execute a certification prepared by the Contractor or a subcontractor as may be required by the regulations of the Pennsylvania Department of Revenue. A sample certificate, "Pennsylvania Exemption Certificate", is included in this Specification.
- B. The Owner may be entitled to claim refunds of sales or use tax paid on other purchases of tangible personal property required in connection with the Work. The Contractor and all subcontractors hereby assign to the Owner all rights to claim any such refund claim and to any resulting refund and hereby appoint the Owner as their attorney-in-fact to execute and to acknowledge in their respective names and to prosecute such refund claims before administrative agencies and courts in Pennsylvania having jurisdiction over such claims. The Owner or its agent shall have the right at the Owner's expense to review the books and records

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- of the Contractor and all subcontractors for the purpose of documenting and substantiating any such refund claim. The Contractor and all subcontractors shall cooperate fully with the Owner in pursuing any such refund claim and shall make available to the Owner any applicable documents.
- C. Access to Accounting Records: The Contractor shall check all materials, equipment, and labor entering into the Work, and shall keep such full and detailed accounts as may be necessary for proper financial management under this Agreement, and the system shall be satisfactory to the Owner. The Owner or its representative shall be afforded access to all the Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to this Contract, and the Contractor shall preserve all such records for a period of three (3) years, or for such longer periods as may be required by law, after the Final Payment (as defined in the General Conditions, Article 9, "Payments and Completion").
- D. Contractors with Subcontractors: The Contractor agrees to include the "Access to Accounting Records" and "Assignment of Refund Rights" paragraphs, in full in any contracts with subcontractors. The Contractor further agrees that it will not file a claim for refund for any sales or use tax which is the subject of the assignment in paragraph B above. The Contractor shall obtain from all subcontractors similar agreements that they will not file claims for refund for any sales or use tax which is the subject of the assignment in Paragraph B above.

EXHIBIT "A"

"Building machinery and equipment." Generation equipment, storage equipment, air conditioning equipment, distribution equipment and termination equipment which shall be limited to the following:

- (1) air conditioning limited to heating, cooling, purification, humidification, dehumidification and ventilation;
- (2) electrical;
- (3) plumbing;
- (4) communications limited to voice, video, data, sound, master clock and noise abatement;
- (5) alarms limited to fire, security and detection;
- (6) control system limited to energy management, traffic and parking lot and building access;
- (7) medical system limited to diagnosis and treatment equipment, medical gas, nurse call and doctor paging;
- (8) laboratory system;
- (9) cathodic protection system, or
- (10) furniture, cabinetry and kitchen equipment.

The term shall include boilers, chillers, air cleaners, humidifiers, fans, switchgear, pumps, telephones, speakers, horns, motion detectors, dampers, actuators, grills, registers, traffic signals, sensors, card access devices, guardrails and medical devices, floor troughs and grates, laundry equipment, together with integral coverings and enclosures, whether or not the item constitutes a fixture or is otherwise affixed to the real estate; whether or not damage would be done to the item or its surroundings upon removal; or whether or not the item is physically located within a real estate structure. The term "building machinery and equipment" shall not include guardrail posts, pipes, fittings, pipe supports and hangers, valves, underground tanks, wire conduit, receptacle and junction boxes, insulation, ductwork and coverings thereof.

SECTION 31 - DISCRIMINATION PROHIBITED

- A. According to 62 Pa.C.S.A. § 3701, the Contractor agrees that:
1. In the hiring of employees for the performance of work under this Contract, or any subcontract, no contractor, or subcontractor, or any person acting on behalf of the Contractor or subcontractor shall by reason of gender, race, creed, or color discriminate against any citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates;

2. No contractor, or subcontractor, or any person on their behalf, shall in any manner discriminate against or intimidate any employee hired for the performance of work under this Contract on account of gender, race, creed, or color;
3. This Contract may be canceled or terminated by the Owner, and all money due or to become due under this Contract may be forfeited, for a violation of the terms or conditions of that portion of the Contract.

SECTION 32 - FEDERAL REQUIREMENTS

- A. **EQUAL EMPLOYMENT OPPORTUNITY.** Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of “federally assisted construction contract” in 41 CFR Part 60–1.3 must include the equal opportunity clause provided under 41 CFR 60–1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964–1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”
- B. **DAVIS-BACON ACT,** as amended (40 U.S.C. 3141–3148). When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141–3144, and 3146–3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.
- C. **CONTRACT WORK HOURS AND SAFETY STANDARDS ACT** (40 U.S.C. 3701–3708). Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
- D. **RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT.** If the Federal award meets the definition of “funding agreement” under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part

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- 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.
- E. CLEAN AIR ACT (42 U.S.C. 7401–7671q.) and the FEDERAL WATER POLLUTION CONTROL ACT (33 U.S.C. 1251–1387), as amended—Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401–7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251–1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).
- F. DEBARMENT AND SUSPENSION (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government-wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR Part 1986 Comp., p. 189) and 12689 (3 CFR Part 1989 Comp., p. 235), “Debarment and Suspension.” The Excluded Parties List System in SAM contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.
- G. BYRD ANTI-LOBBYING AMENDMENT (31 U.S.C. 1352)—Contractors that apply or bid for an award of \$100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier-to-tier up to the non-Federal award.
- H. TERMINATION FOR CAUSE. Tredyffrin/Easttown School District may terminate the whole or any part of this Agreement, by written notice of default to Vendor, in any one of the following circumstances:
1. if Vendor fails to perform any duties or obligations within the time specified herein or any written extension thereof granted by Tredyffrin/Easttown School District;
 2. if Vendor so fails to make progress as to endanger performance of this Agreement in accordance with its terms;
 3. if Vendor fails to comply with any of the material terms and conditions of this Agreement. Such termination shall become effective if Vendor does not cure such failure within a period of ten (10) days after written notice of default by Tredyffrin/Easttown School District;
 4. if the other party is declared insolvent or bankrupt, or makes an assignment for the benefit of creditors, or a receiver is appointed or any proceeding is demanded by, for or against the other under any provision of the Federal Bankruptcy Act or any amendment thereof. Upon termination, Tredyffrin/Easttown School District may procure, upon such terms as it shall deem appropriate, services similar to those so terminated. Vendor shall continue performance of this Agreement to the extent not terminated.
- I. TERMINATION FOR CONVENIENCE. Tredyffrin/Easttown School District may terminate this contract at any time for any reason by giving at least thirty (30) days’ notice in writing to the awarded vendor(s). Such termination shall not be deemed a breach of contract. Tredyffrin/Easttown School District agrees to pay the vendor(s) for all unpaid invoices and uncompensated staff time and expenses up to the date of termination. The vendor must provide a detailed statement of any uncompensated staff time and expenses.

END OF SECTION



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF REVENUE
BUREAU OF BUSINESS TRUST FUND TAXES
DEPT. 280901
HARRISBURG, PA 17128-0901

PENNSYLVANIA EXEMPTION CERTIFICATE

CHECK ONE:

- ☐ STATE OR LOCAL SALES AND USE TAX
☐ STATE OR LOCAL HOTEL OCCUPANCY TAX
☐ PUBLIC TRANSPORTATION ASSISTANCE TAXES AND FEES (PTA)
☐ PASSENGER CAR RENTAL TAX (PCRT)

(Please Print or Type)

This form cannot be used to
obtain a Sales Tax License
Number, PTA License Number
or Exempt Status.

Read Instructions
On Reverse Carefully

THIS FORM MAY BE PHOTOCOPIED - VOID UNLESS COMPLETE INFORMATION IS SUPPLIED

- CHECK ONE:** ☐ PENNSYLVANIA TAX UNIT EXEMPTION CERTIFICATE (USE FOR ONE TRANSACTION)
☐ PENNSYLVANIA TAX BLANKET EXEMPTION CERTIFICATE (USE FOR MULTIPLE TRANSACTIONS)

Name of Seller or Lessor

Street

City

State

Zip Code

Property and services purchased or leased using this certificate **are exempt** from tax because: (Select the appropriate paragraph from the back of this form, check the corresponding block below and insert information requested.)

- ☐ 1. Property or services will be used directly by purchaser in performing purchaser's operation of: _____
- ☐ 2. Purchaser is a/an: _____
- ☐ 3. Property will be resold under License Number _____ (If purchaser does not have a PA Sales Tax License Number, include a statement under Number 7 explaining why a number is not required.)
- ☐ 4. Purchaser is a/on: _____ holding Exemption Number _____
- ☐ 5. Property or services will be used directly by purchaser performing a public utility service. (Complete Part 5 on Reverse.)
- ☐ 6. Exempt wrapping supplies, License Number _____. (If purchaser does not have a PA Sales Tax License Number, include a statement under Number 7 explaining why a number is not required.)
- ☐ 7. Other _____
(Explain in detail. Additional space on reverse side.)

I am authorized to execute this Certificate and claim this exemption. Misuse of this Certificate by seller, lessor, buyer, lessee, or their representative is punishable by fine and imprisonment.

Name of Purchaser or Lessee

Signature

Date

Street

City

State

Zip Code

1. ACCEPTANCE AND VALIDITY:

For this certificate to be valid, the seller/lessor shall exercise good faith in accepting this certificate, which includes: (1) the certificate shall be completed properly; (2) the certificate shall be in the seller/lessor's possession within sixty days from the date of sale/lease; (3) the certificate does not contain information which is knowingly false; and (4) the property or service is consistent with the exemption to which the customer is entitled. For more information, refer to Exemption Certificates, Title 61 PA Code §32.2. An invalid certificate may subject the seller/lessor to the tax.

2. REPRODUCTION OF FORM:

This form may be reproduced but shall contain the same information as appears on this form.

3. RETENTION

The seller or lessor must retain this certificate for at least four years from the date of the exempt sale to which the certificate applies. **DO NOT RETURN THIS FORM TO THE PA DEPARTMENT OF REVENUE.**

4. EXEMPT ORGANIZATIONS:

This form may be used in conjunction with form REV-1715, Exempt Organization Declaration of Sales Tax Exemption, when a purchase of \$200 or more is made by an organization which is registered with the PA Department of Revenue as an exempt organization. These organizations are assigned an exemption number, beginning with the two digits 75 (example: 75-00000-0).

GENERAL INSTRUCTIONS

Those purchasers set forth below may use this form in connection with the claim for exemption for the following taxes:

- a. State and Local Sales and Use Tax;
- b. PTA rental fee or tax on leases of motor vehicles;
- c. Hotel Occupancy Tax if referenced with the symbol (●);
- d. PTA fee on the purchase of tires if referenced with the symbol (+);
- e. Passenger Car Rental Tax

EXEMPTION REASONS

- 1.) Property and/or services will be used directly by purchaser in performing purchaser's operation of:

A. Manufacturing B. Mining C. Dairying D. Processing E. Farming F. Shipbuilding

This exemption is not valid for property or services which are used in: (a) constructing, repairing, or remodeling of real property, other than real property which is used directly in exempt operations; or (b) maintenance, managerial, administrative, supervisory, sales, delivery, warehousing or other nonoperational activities. Effective October 1, 1991, this exemption does not apply to certain services and PTA tire fee.

- 2.) Purchaser is a/an:

- + A. Instrumentality of the Commonwealth.
- + B. Political subdivision of the Commonwealth.
- + ● C. Municipal Authority created under the "Municipal Authority Acts of 1935 or 1945."
- + ● D. Electric Co-operative Corporation created under the "Electric Co-operative Law of 1990."
- + ● E. Co-operative Agricultural Association required to pay Corporate Net Income Tax under the Act of May 23, 1945, P.L. 893, as amended (exemption not valid for registered vehicles).
- + ● F. Credit Unions organized under "Federal Credit Union Act" or State "Credit Union Act".
- + ● G. Federal Instrumentality
- + ● H. Federal employee on official business (Exemption limited to Hotel Occupancy Tax only. A copy of orders or statement from supervisor must be attached to this certificate.)
- + I. School Bus Operator (This Exemption Certificate is limited to the purchase of parts, repairs or maintenance services upon vehicles licensed as school buses by the PA Department of Transportation. For purchase of school buses, see NOTE below.)

- 3.) Property and/or services will be resold or rented in the ordinary course of purchaser's business. If purchaser does not have a PA Sales Tax License Number, complete Number 7 explaining why such number is not required. This Exemption is valid for property or services to be resold: (1) in original form; or (2) as an ingredient or component of other property.

- 4.) Special exemptions

- | | |
|--------------------------------------|--|
| A. Religious Organization | E. Direct Pay Permit Holder |
| B. Volunteer Fireman's Organization | + ● F. Individual Holding Diplomatic ID |
| C. Nonprofit Educational Institution | + G. School District |
| D. Charitable Organization | H. Tourist Promotion Agency |
| | (Exemption limited to the purchase of promotional materials for distribution to the public.) |

Exemption limited to purchase of tangible personal property or services for use and not for sale. The exemption shall not be used by a contractor performing services to real property. An exempt organization or institution shall have an exemption number assigned by the PA Department of Revenue and diplomats shall have an identification card assigned by the Federal Government. The exemption for categories "A, B, C and D" are not valid for property used for the following: (1) construction, improvement, repair or maintenance of any real property, except supplies and materials used for routine repair or maintenance of the real property; (2) any unrelated activities or operation of a public trade or business; or (3) equipment used to maintain real property.

- 5.) Property or services will be used directly by purchaser in the production, delivery, or rendition of public utility services as defined by the PA Utility Code.

☐ PA Public Utility Commission and/or

☐ Interstate Commerce Commission

A contract carrier is not entitled to this Exemption and a "Schedule of Charges" filed by such carrier does not satisfy this requirement. This Exemption is not valid for property or services used for the following: (1) construction, improvement, repair or maintenance of real property, other than real property which is used directly in rendering the public utility services; or (2) managerial, administrative, supervisor, sales or other nonoperational activities; or (3) tools and equipment used but not installed in maintenance of facilities or direct use equipment. Tools and equipment used to repair "direct use" property are exempt from tax.

- 6.) Vendor/Seller purchasing wrapping supplies and nonreturnable containers used to wrap property which is sold to others.

- 7.) Other (Attach a separate sheet of paper if more space is required.)

NOTE: Do not use this form for claiming an exemption on the registration of a vehicle. To claim an exemption from tax for a motor vehicle, trailer, semi-trailer or tractor with the PA Department of Transportation, Bureau of Motor Vehicles and Licensing, use **FORM MV-1**, "Application for Certificate of Title", for "first time" registrations and **FORM MV-4ST**, "Vehicle Sales and Use Tax Return/Application for Registration", for all other registrations.

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we

(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called the Principal, and

(Here insert full name and address or legal title of Surety)

a corporation duly organized under the laws of the State of
as Surety, hereinafter called the Surety, are held and firmly bound unto

(Here insert full name and address or legal title of Owner)

as Obligee, hereinafter called the Obligee, in the sum of

Dollars (\$),

for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for

(Here insert full name, address and description of project)

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this

day of

20

(Witness) { _____
(Principal) (Seal)

(Title)

(Witness) { _____
(Surety) (Seal)

(Title)

#26-016.02

NCA - 1

NON-COLLUSION AFFIDAVIT

Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS, & CHS for the Tredyffrin/Easttown School District

State of _____ :

County of _____ :

I state that I am _____ of _____
(Title) (Name of my firm)

and that I am authorized to make this affidavit on behalf of my firm, and its owners, directors, and officers. I am the person responsible in my firm for the price(s) and the amount of this bid.

I state that:

- (1) The price(s) and amount of this bid have been arrived at Independently and without consultation, communication or agreement with any other contractor, bidder or potential buyer.
- (2) Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is bidder or potential bidder, and they will not be disclosed before bid opening.
- (3) No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.
- (4) The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.
- (5) _____ its affiliates,
(Name of my firm)

subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

I state that _____ understands and acknowledges that
(Name of my firm)

acknowledges that the above representations are material and important, and will be relied on by

Tredyffrin/Easttown School District
(Name of public entity)

in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from

Tredyffrin/Easttown School District
(Name of public entity)

of the true facts relating to the submission of bids for this contract.

NON-COLLUSION AFFIDAVIT (Continued)

#26-016.02

NCA - 2

Authorized Signature

Printed Name

Company Position

SWORN TO AND SUBSCRIBED

BEFORE ME THIS _____ DAY OF _____

Notary Public _____ My Commission Expires _____

INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

1. This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid according to the Pennsylvania Antibid-Rigging Act, 73 P.S. SS 1611 et seq., governmental agencies may require Non-Collusion Affidavits to be submitted together with bids.
2. This Non-Collusion Affidavit must be executed by the member, officer, or employee of the bidder who makes final decisions on prices and the amount quoted in the bid.
3. Bid rigging and other efforts to restrain competition and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval or submission of the bid.
4. In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.
5. The term “complementary bid” as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or noncompetitive bid and other form of bid submitted for the purpose of giving a false appearance of competition.
6. Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.



AIA Document A305

Contractor's Qualification Statement

1986 EDITION

This form is approved and recommended by The American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by the AIA or AGC.

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO:

ADDRESS:

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

Corporation ☐

Partnership ☐

Individual ☐

Joint Venture ☐

Other ☐

NAME OF PROJECT (if applicable):

TYPE OF WORK (file separate form for each Classification of Work):

_____ General Construction

_____ HVAC

_____ Plumbing

_____ Electrical

_____ Other _____

(please specify)

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1. ORGANIZATION

- 1.1 How many years has your organization been in business as a Contractor?
- 1.2 How many years has your organization been in business under its present business name?
 - 1.2.1 Under what other or former names has your organization operated?
- 1.3 If your organization is a corporation, answer the following:
 - 1.3.1 Date of incorporation:
 - 1.3.2 State of incorporation:
 - 1.3.3 President's name:
 - 1.3.4 Vice-president's name(s):
 - 1.3.5 Secretary's name:
 - 1.3.6 Treasurer's name:
- 1.4 If your organization is a partnership, answer the following:
 - 1.4.1 Date of organization:
 - 1.4.2 Type of partnership (if applicable):
 - 1.4.3 Name(s) of general partner(s):
- 1.5 If your organization is individually owned, answer the following:
 - 1.5.1 Date of organization:
 - 1.5.2 Name of owner:

- 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

2. LICENSING

- 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.
- 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

3. EXPERIENCE

- 3.1 List the categories of work that your organization normally performs with its own forces.
- 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)
- 3.2.1 Has your organization ever failed to complete any work awarded to it?
- 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?
- 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?
- 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

- 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.
 - 3.4.1 State total worth of work in progress and under contract.
 - 3.4.2 For references, provide the names of individuals, along with phone number and e-mail contacts for each such person listed.
- 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.
 - 3.5.1 State average annual amount of construction work performed during the past five years.
 - 3.5.2 For references, provide the names of individuals, along with phone number and e-mail contacts for each such person listed.
- 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

4. REFERENCES

4.1 Trade References:

4.2 Bank References:

4.3 Surety:

4.3.1 Name of bonding company:

4.3.2 Name and address of agent:

5. FINANCING

5.1 Financial Statement.

5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

5.1.3 Is the attached financial statement for the identical organization named on page one?

5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidary).

5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

6. SIGNATURE

6.1 Dated at this 20 day of

Name of Organization:

By:

Title:

6.2

M being
duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be
misleading.

Subscribed and sworn before me this 20 day of

Notary Public:

My Commission Expires:

PERFORMANCE BOND

**Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS,
& CHS**

for the Tredyffrin/Easttown School District

Bond No. _____

BID TITLE: _____

And Now, we _____ [CONTRACTOR], as Principal (the
“Principal”),

and _____ [SURETY] , a Corporation organized and
existing

under the laws of the _____ of _____ as Surety (the “Surety”), are
jointly and severally held and firmly bound to the Tredyffrin/Easttown School District, its successors and
assigns (the “Obligee”), for the performance of the Contract hereinafter identified and incorporated herein
by this reference

in the sum of _____ (Amount of
Contract), lawful money of the United States of America to be paid to the Obligee; to which performance
or payment, well and truly to be made, we bind ourselves and each of our successors and assigns, jointly
and severally.

I. RECITALS

WHEREAS, the Principal has submitted to the Obligee a certain proposal, dated _____ (the
"Proposal"),

to perform certain _____ General Construction _____ Electrical Construction _____ Plumbing
Construction

_____ HVAC Construction _____ Other: _____ (Name of Contract)
for the

_____ (Name of Project) for the
Obligee, in connection with plans, specifications and other related documents, which are incorporated into
the Proposal by reference (the "Contract Documents"); and

WHEREAS, the Obligee, is a "contracting body" under provisions of Act No. 385 of the General Assembly
of the Commonwealth of Pennsylvania, approved by the Governor on December 20, 1967, known as and
cited as the "Public Works Contractors' Bond Law of 1967" (the "Act");

WHEREAS, the Act, in Section 3 (a), requires that, before an award shall be made to the Principal by the Oblige in accordance with the Proposal, the Principal shall furnish this Bond to the Oblige, with this Bond to become binding upon the award of a contract to the Principal by the Oblige in accordance with the Proposal; and

WHEREAS, it also is a condition of the Contract Documents that this Bond shall be furnished by the Principal to the Oblige and

WHEREAS, under the Contract Documents, it is provided, inter alia, that if the Principal shall furnish this Bond to the Oblige, and if the Oblige shall make an award to the Principal in accordance with the Proposal, then the Principal and the Oblige shall enter into an agreement with respect to performance of such work (the "Agreement"), the form of which Agreement is set forth in the Contract Documents.

II. CONDITIONS OF BOND

NOW, THEREFORE, the terms and conditions of this Bond are and shall be that if:

(a) the Principal well, truly, and faithfully shall comply with and shall perform the Agreement in accordance with the Contract Documents, at the time and in the manner provided in the Agreement and in the Contract Documents, and if the Principal shall satisfy all claims and demands incurred in or related to the performance of the Agreement by the Principal or growing out of the performance of the Agreement by the Principal, and if the Principal shall indemnify completely and shall hold harmless the Oblige and all of its officers, directors, agents or employees from any and all costs and damages which the Oblige and any or all of its officers, directors, agents and employees may sustain or suffer including, but not limited to, attorney's fees, costs, expenses and interest by reason of the failure of the Principal to do so, and if the Principal shall reimburse completely and pay to the Oblige any and all costs, damages and expenses, including interest and attorney's fees) which the Oblige and any or all of its officers, directors, agents and employees may incur by reason of any such default or failure by the principal and

(b) the Principal shall remedy, without cost to the Oblige, all defects, deficiencies or failures in any labor, materials or equipment performed or provided by the Principal in its performance of the Agreement which may develop during the period of two (2) years from the date of final completion by the Principal and final acceptance of the Oblige of the work to be performed under the Agreement in accordance with the Contract Documents, which defects, in the sole judgment of the Oblige or its legal successors in interests, shall be caused by or shall result from defective or inferior materials or workmanship,

then this Bond shall be void; otherwise, this Bond shall be and shall remain in force and effect.

We further agree to indemnify and hold harmless the Tredyffrin/Easttown School District against any and all costs, liabilities, expenses, attorney's fees and obligations which the School District sustains by reason of the failure of the Principal or the Surety to comply with the terms of the Contract Documents or this Obligation. This Bond is executed and delivered under and subject to the Act, to which reference hereby is made.

The Principal and the Surety agree that any alterations, changes or additions to the Contract Documents, or any alterations, changes or additions to the work to be performed under the Agreement in accordance with the Contract Documents, or any alterations, changes or additions to the Agreement, or any act of forbearance of either the Principal or the Oblige toward the other with respect to the Contract Documents and the Agreement, or the reduction of any percentage to be retained by Oblige as permitted by the

Contract Documents and by the Agreement, shall not release in any manner whatsoever, the Principal and the Surety or either of them, their heirs, executors, administrators, successors and assigns, from liability and obligations under this Bond; and the Surety, for value received, waives notice of any such alterations, changes, additions, extensions of time, acts of forbearance or reduction of retained percentage.

It is further agreed that, in the sole discretion of the Tredyffrin/Easttown School District and upon notice therefrom, the Surety may be required to perform and carry out the provisions of the Contract in the event of a breach thereof by the Principal, whereupon the rights and responsibilities of the Surety and the Tredyffrin/Easttown School District to each other shall be the same as those of the Principal and the Tredyffrin/Easttown School District immediately prior to the breach giving rise to the Surety's obligation hereunder. If the Surety does not proceed promptly to render such performance or cause such performance to be rendered by a third party satisfactory to the Tredyffrin/Easttown School District, then, the Surety shall be deemed to be in default on this obligation fifteen (15) days after the receipt of notice from Tredyffrin/Easttown School District that the Surety shall so proceed, and the Tredyffrin/Easttown School District shall be entitled to enforce against Surety any remedy it may then or thereafter have against the Principal. If the Principal is a foreign corporation (incorporated under any laws other than those of the Commonwealth of Pennsylvania) then further terms and conditions of this Bond are and shall be that the Principal or the Surety shall not be discharged from liability on this, nor this Bond surrendered until such Principal files with the Obligee a certificate from the Pennsylvania of Revenue evidencing the payment in full of all bonus taxes, penalties and interest, and a certificate from the Bureau of Employment and Unemployment Compensation of the Pennsylvania Department of Labor and industry, evidencing the payment of all unemployment compensation, contributions, penalties and corporations, subcontractors thereunder or for such liability has accrued but the time for payment has not arrived, all in accordance with provisions of the Act of June 10, 1947, P.L. 493, of the Commonwealth of Pennsylvania.

This obligation incorporates by reference the Public Works Contractors' Bond Law of 1967, provided, however, that in the event of any inconsistencies or ambiguity in the meaning of this obligation and the said Public Works Contractors' Bond Law of 1967 the express terms of this obligation shall govern and control.

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IN WITNESS WHEREOF, the Principal and Surety cause this Bond to be signed, sealed and delivered this _____ day of _____, 20__.

ATTEST:

[NAME OF CORPORATION]

By: _____

President

(CORPORATE SEAL)

or, if appropriate

WITNESS

[NAME OF CORPORATION]

By: _____

Authorized Representative

(CORPORATE SEAL)

*Attach appropriate proof, bearing date of Bond,
evidencing authority to act for Corporation

WITNESS

Corporate Surety

By: _____

Attorney-in-Fact

(CORPORATE SEAL)

Issuing Office:

Address

City, State, Zip

#26-016.02

PLMB - 1

PAYMENT OR LABOR AND MATERIALMEN'S BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____, as Principal, and

_____, as Surety,

are held and firmly bound unto Tredyffrin/Easttown School District as Obligee, in the full and just sum of

_____ Dollars (\$_____) lawful money of the United States of America,

to be paid to said Obligee, or its assigns, to which payment well and truly to be made and done, we bind ourselves, our heirs, executors, administrators and successors jointly, and severally, firmly by these presents.

Sealed with our respective seals and dated this _____ day of _____, 20____.

WHEREAS, the Principal has submitted to the Obligee a certain proposal, dated _____ (the "Proposal"), to perform certain

___ General Construction ___ Electrical Construction ___ Plumbing Construction

___ HVAC Construction ___ Other _____

for the _____ (Name of Project) in connection with plans, specifications and other related documents, which are incorporated into the Proposal by reference (the "Contract Documents"); and

WHEREAS, the Obligee, is a "contracting body" under the provisions of Act No. 385 of the General Assembly of the Commonwealth of Pennsylvania, approved by the Governor on December 20, 1967, known as and cited as the "Public Works Contractors' Bond Law of 1967" the "Act");

WHEREAS, the Act, in Section 3 (a), requires that, before an award shall be made to the Principal by the Obligee in accordance with the Proposal, the Principal shall furnish this Bond to the Obligee, with this Bond to become binding upon the award of a contract to the Principal by the Obligee in accordance with the Proposal; and

WHEREAS, the Contract Documents state, inter alia, that if the Principal shall furnish this Bond the Obligee, and if the Obligee shall make an award to the Principal in accordance with the Proposal, then the Principal and the Obligee shall enter into an agreement with respect to performance of such work (the "Agreement"), the form of which Agreement is set forth in the Contract Documents

NOW THEREFORE, the terms and conditions of this Bond are and shall be that if the Principal and any Sub-Contractor of the Principal to whom any portion of the work under the Agreement shall be subcontracted, and if all assignees of the Principal and of any such subcontractor, promptly shall pay or shall cause to be paid, in full, all money which may be due any claimant supplying labor or materials in the prosecution and performance of the work in accordance with the Agreement and in accordance with the Contract Documents, including any amendment, extension or addition to the Agreement and/or to the Contract Documents, for material furnished or labor supplies or labor performed, then this Bond shall be void; otherwise, the Bond shall be and shall remain in force and effect.

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This Bond shall be solely for the protection of claimants supplying labor or materials to the Principal or to any subcontractor of the Principal in the prosecution of the work covered by the Agreement, including any amendment, extension, or addition to the Agreement. The term, "Claimant", when used herein shall mean any individual, firm, partnership, association or corporation. The phrase "Labor or Materials" when used herein shall include public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the site of the work covered by the Agreement. The provisions of this Bond shall be applicable whether or not the material furnished or labor performed enters into and becomes a component part of the public building, public work or public improvement contemplated by the Contract Documents and the Agreement.

The Principal and the Surety agree that any claimant, who has performed labor or furnished material in the prosecution of the work in accordance with the Agreement and in accordance with the Contract Documents, including any amendment, extension or addition to the Agreement and/or to the Contract Documents, and who has not been paid therefore, in full, before the expiration of ninety (90) days after the day on which such claimant performed the last of such labor or furnished the last of such materials for which payment is claimed, may institute an action upon this Bond, in the name of the claimant in assumpsit, to recover any amount due the claimant for such labor or material; and may prosecute such action to final judgment and may have execution upon the judgment provided however, that: (a) any claimant who has a direct contractual relationship with any sub-contractor of the Principal but has not contractual relationship, express or implied, with the Principal, may institute an action upon this Bond only if such claimant first shall have given written notice, served in the manner provided in the Act, to the Principal, within ninety (90) days from the date upon which such claimant performed the last of the labor or furnished the last of the materials for which payment is claimed, stating, with substantial accuracy, the amount claimed and the name of the person for whom the work was performed or to whom the material was furnished; and (b) no action upon this Bond shall be commenced after the expiration of one (1) year from the day upon the last of the labor was performed or material was supplied, for the payment of which such action is instituted by the claimant; and (c) every action upon this Bond shall be instituted either in the appropriate court of the County where the Agreement is to be performed or of such other County as Pennsylvania statutes shall provide, or in the United States District Court for the district in which the project, to this Agreement relates, is situated, and not elsewhere.

The Principal and the Surety agree that any alterations, changes and/or additions to the Contract Document, and/or any alterations, changes and/or additions to the work to be performed under the Agreement in accordance with the Contract Documents, and/or any alterations, changes and/or additions to the Agreement, and/or any giving by the Oblige of any extensions of time for the performance of the Agreement in accordance with the Contract Documents, and/or any act of forbearance of either the Principal or the Oblige toward the other with respect to the Contract Documents and the Agreement, and/or the reduction of any percentage to be retained by the Oblige as permitted by the Contract Documents and by the Agreement shall not release in any manner whatsoever, the Principal and the Surety, or either of them, their heirs, executors, administrators, successors and assigns, from liability and obligations under this Bond; and the Surety, for value received, does waive notice of any such alterations, changes, additions, extensions of time, acts of forbearance and/or reduction of retained percentage

It is expressly agreed that this Bond shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract Documents not increasing the contract price more than twenty percent (20%), so as to bind the Principal and the Surety to the full and faithful performance of the Contract Documents as so amended. The term "Amendment," wherever used in this Bond and whether referring to this bond, the Contract Documents, or the Agreement, shall include any alteration, addition, extension or modification of any character whatsoever. Provided, further, that no final settlement between the Oblige and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

#26-016.02

PLMB - 3

IN WITNESS WHEREOF the Principal and Surety, intending to be legally bound, have executed this bond the day and year aforementioned,(Partnerships or Individual Principals sign here)

Signed, sealed and delivered
in the presence of:

_____(Seal)
(Name of Partnership, Firm or Individual Principal Trading as..., etc.)

_____(Seal)

_____(Seal)

_____(Seal)

_____(Seal)

(Corporate Principal sign here)

(Name of Corporation)

ATTEST

By: _____
(President or Vice-President)

(Secretary or Treasurer)

COMPANY

(Witness)

(Attorney-in-fact)

SURETY

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project Name:	Interior/Exterior Renovations and Upgrades at Devon Elementary School
General Description:	Replacement of curb and sidewalk. Localized brick facade repair.
Project Locality	400 S Fairfield Road, Devon, P
Awarding Agency:	Tredyffrin Easttown School District
Contract Award Date:	11/23/2026
Serial Number:	26-08386
Project Classification:	Building/Highway
Determination Date:	9/17/2026
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Chester County

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08386 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/1/2025		\$60.84	\$48.71	\$109.55
Asbestos & Insulation Workers	5/1/2026		\$64.51	\$50.26	\$114.77
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$54.59	\$29.02	\$83.61
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$47.47	\$29.02	\$76.49
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$23.74	\$20.62	\$44.36
Carpenters	5/1/2026		\$48.55	\$30.39	\$78.94
Carpenters	5/1/2027		\$50.46	\$30.74	\$81.20
Carpenters	5/1/2028		\$52.43	\$31.09	\$83.52
Carpenters	5/1/2029		\$54.46	\$31.44	\$85.90
Carpenters	5/1/2030		\$56.55	\$31.79	\$88.34
Cement Finishers & Plasterers	5/1/2022		\$38.57	\$32.39	\$70.96
Cement Masons	5/1/2024		\$46.70	\$32.46	\$79.16
Cement Masons	5/1/2025		\$48.70	\$32.46	\$81.16
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Drywall Finisher	5/1/2025		\$40.14	\$32.35	\$72.49
Drywall Finisher	5/1/2026		\$41.10	\$32.99	\$74.09
Electricians	6/1/2026		\$55.25	\$41.28	\$96.53
Electricians	5/31/2027		\$57.33	\$42.80	\$100.13
Electricians	5/29/2028		\$59.49	\$44.14	\$103.63
Electricians	5/28/2029		\$61.64	\$45.49	\$107.13
Elevator Constructor	1/1/2025		\$71.85	\$45.77	\$117.62
Elevator Constructor	1/1/2026		\$74.86	\$46.86	\$121.72
Floor Coverer	5/1/2025		\$51.67	\$31.69	\$83.36
Floor Coverer	5/1/2026		\$52.84	\$32.86	\$85.70
Glazier	5/1/2025		\$49.96	\$38.34	\$88.30
Glazier	5/1/2026		\$51.30	\$39.37	\$90.67
Interior Finish	5/1/2023		\$34.60	\$25.80	\$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2025		\$44.77	\$36.27	\$81.04
Iron Workers (Riggers)	7/1/2026		\$48.84	\$36.52	\$85.36
Iron Workers (Rodman/Reinforcing)	7/1/2024		\$47.70	\$34.77	\$82.47
Iron Workers (Rodman/Reinforcing)	7/1/2025		\$47.80	\$36.65	\$84.45
Iron Workers (Rodman/Reinforcing)	7/1/2026		\$52.39	\$36.90	\$89.29
Laborers (Class 01 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Laborers (Class 02 - See notes)	5/1/2025		\$41.00	\$27.70	\$68.70
Laborers (Class 03 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 04 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 05 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Landscape Laborer	5/1/2025		\$32.15	\$24.30	\$56.45

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08386 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Marble Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Marble Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Marble Mason	5/1/2023		\$47.20	\$31.95	\$79.15
Marble Setter	5/1/2026		\$51.50	\$33.80	\$85.30
Mason Tender, Cement	5/1/2023		\$35.02	\$25.98	\$61.00
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators (Building, Class 01 - See Notes)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators (Building, Class 01 - See Notes)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators (Building, Class 01A - See Notes)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators (Building, Class 01A - See Notes)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators (Building, Class 02 - See Notes)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators (Building, Class 02 - See Notes)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators (Building, Class 02A - See Notes)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators (Building, Class 02A - See Notes)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators (Building, Class 03 - See Notes)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators (Building, Class 03 - See Notes)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators (Building, Class 04 - See Notes)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators (Building, Class 04 - See Notes)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators (Building, Class 05 - See Notes)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators (Building, Class 05 - See Notes)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators (Building, Class 06 - See Notes)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators (Building, Class 06 - See Notes)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators (Building, Class 07A- See Notes)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators (Building, Class 07A- See Notes)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators (Building, Class 07B- See Notes)	5/1/2025		\$65.97	\$39.46	\$105.43
Operators (Building, Class 07B- See Notes)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters Class 1 (see notes)	5/1/2025		\$44.38	\$34.55	\$78.93
Painters Class 1 (see notes)	5/1/2026		\$45.71	\$35.22	\$80.93
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 4 (see notes)	5/1/2025		\$46.47	\$34.55	\$81.02
Painters Class 4 (see notes)	5/1/2026		\$48.45	\$35.22	\$83.67
Plasterers	5/1/2024		\$39.88	\$33.08	\$72.96
plumber	5/1/2025		\$70.53	\$39.46	\$109.99
plumber	5/1/2026		\$73.73	\$40.36	\$114.09
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Pointers, Caulkers, Cleaners	5/1/2026		\$53.35	\$32.30	\$85.65
Roofers (Composition)	5/1/2025		\$46.03	\$34.77	\$80.80
Roofers (Composition)	5/1/2026		\$47.53	\$35.22	\$82.75
Roofers (Shingle)	5/1/2024		\$34.35	\$22.20	\$56.55
Roofers (Slate & Tile)	5/1/2024		\$37.35	\$22.20	\$59.55
Sheet Metal Workers	5/1/2025		\$62.62	\$52.17	\$114.79
Sheet Metal Workers	5/1/2026		\$65.06	\$54.48	\$119.54

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08386 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sign Makers and Hangars	7/15/2025		\$33.48	\$26.41	\$59.89
Sign Makers and Hangars	7/15/2026		\$36.38	\$25.01	\$61.39
Sprinklerfitters	1/1/2023		\$62.23	\$31.99	\$94.22
Sprinklerfitters	5/1/2025		\$70.37	\$34.85	\$105.22
Steamfitters	5/1/2024		\$70.32	\$43.09	\$113.41
Steamfitters	5/1/2025		\$72.52	\$44.89	\$117.41
Stone Masons	5/1/2025		\$50.00	\$32.80	\$82.80
Stone Masons	5/1/2026		\$51.50	\$33.80	\$85.30
Terrazzo Finisher	5/1/2025		\$45.61	\$29.41	\$75.02
Terrazzo Finisher	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Grinder	5/1/2025		\$45.88	\$29.41	\$75.29
Terrazzo Grinder	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Mechanics	5/1/2025		\$52.21	\$31.26	\$83.47
Terrazzo Mechanics	5/1/2026		\$53.36	\$32.61	\$85.97
Tile Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Tile Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Tile Setter	5/1/2025		\$52.21	\$31.26	\$83.47
Tile Setter	5/1/2026		\$53.36	\$32.61	\$85.97
Truckdriver class 1(see notes)	5/1/2024		\$36.79	\$22.54	\$59.33
Truckdriver class 1(see notes)	5/1/2026		\$38.57	\$23.87	\$62.44
Truckdriver class 2 (see notes)	5/1/2024		\$36.89	\$22.54	\$59.43
Truckdriver class 2 (see notes)	5/1/2026		\$38.67	\$23.87	\$62.54
Truckdriver class 3 (see notes)	5/1/2026		\$38.92	\$23.87	\$62.79
Window Film / Tint Installer	6/1/2025		\$27.42	\$15.13	\$42.55

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08386 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$65.96	\$30.09	\$96.05
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		\$67.52	\$30.44	\$97.96
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$58.39	\$29.06	\$87.45
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		\$60.09	\$29.06	\$89.15
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$45.88	\$23.19	\$69.07
Carpenter - Rodman (Surveying & Layout)	5/1/2026		\$46.97	\$23.54	\$70.51
Carpenter	5/1/2025		\$57.36	\$30.09	\$87.45
Carpenter	5/1/2026		\$58.71	\$30.44	\$89.15
Cement Masons	5/1/2023		\$43.20	\$32.91	\$76.11
Cement Masons	5/1/2025		\$46.55	\$32.66	\$79.21
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$61.88	\$45.47	\$107.35
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Electric Lineman	6/3/2024		\$62.07	\$33.96	\$96.03
Electric Lineman	6/2/2025		\$65.10	\$34.45	\$99.55
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2023		\$42.53	\$34.14	\$76.67
Iron Workers (Rodman/Reinforcing)	7/1/2023		\$45.70	\$34.77	\$80.47
Laborers (Class 01 - See notes)	5/1/2025		\$40.20	\$27.80	\$68.00
Laborers (Class 01 - See notes)	5/1/2026		\$41.65	\$27.90	\$69.55
Laborers (Class 02 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 02 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 03 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 03 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 04 - See notes)	5/1/2025		\$35.00	\$27.80	\$62.80
Laborers (Class 04 - See notes)	5/1/2026		\$36.45	\$27.90	\$64.35
Laborers (Class 05 - See notes)	5/1/2025		\$41.05	\$27.80	\$68.85
Laborers (Class 05 - See notes)	5/1/2026		\$42.50	\$27.90	\$70.40
Laborers (Class 06 - See notes)	5/1/2025		\$41.10	\$27.80	\$68.90
Laborers (Class 06 - See notes)	5/1/2026		\$42.55	\$27.90	\$70.45
Laborers (Class 07 - See notes)	5/1/2025		\$40.95	\$27.80	\$68.75
Laborers (Class 07 - See notes)	5/1/2026		\$42.40	\$27.90	\$70.30
Laborers (Class 08 - See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 08 - See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 09 - See notes)	5/1/2025		\$40.55	\$27.80	\$68.35
Laborers (Class 09 - See notes)	5/1/2026		\$42.00	\$27.90	\$69.90
Laborers (Class 10- See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 10- See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 11 -See Notes)	5/1/2025		\$40.60	\$27.80	\$68.40
Laborers (Class 11 -See Notes)	5/1/2026		\$42.05	\$27.90	\$69.95
Laborers (Class 12 -See Notes)	5/1/2025		\$42.30	\$27.80	\$70.10
Laborers (Class 12 -See Notes)	5/1/2026		\$42.85	\$27.90	\$70.75

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08386 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 13 -See Notes)	5/1/2025		\$44.33	\$27.80	\$72.13
Laborers (Class 13 -See Notes)	5/1/2026		\$45.78	\$27.90	\$73.68
Laborers (Class 14 -See Notes)	5/1/2025		\$40.90	\$27.80	\$68.70
Laborers (Class 14 -See Notes)	5/1/2026		\$41.90	\$27.90	\$69.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2025		\$34.07	\$19.73	\$53.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2026		\$35.52	\$19.83	\$55.35
Laborers Utility (PGW ONLY)	5/1/2024		\$39.70	\$19.63	\$59.33
Laborers Utility (PGW ONLY)	5/1/2025		\$41.10	\$19.73	\$60.83
Laborers Utility (PGW ONLY)	5/1/2026		\$42.55	\$19.83	\$62.38
Landscape Laborer	5/1/2024		\$30.28	\$24.05	\$54.33
Landscape Laborer	5/1/2025		\$31.73	\$24.15	\$55.88
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		\$65.97	\$39.46	\$105.43

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08386 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 2 (see notes)	2/1/2025		\$50.85	\$33.91	\$84.76
Painters Class 2 (see notes)	2/1/2026		\$51.61	\$35.00	\$86.61
Painters Class 3 (see notes)	2/1/2025		\$61.81	\$33.95	\$95.76
Painters Class 3 (see notes)	2/1/2026		\$62.57	\$35.04	\$97.61
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2025		\$68.89	\$44.73	\$113.62
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Truckdriver class 1(see notes)	5/1/2024		\$36.64	\$22.54	\$59.18
Truckdriver class 1(see notes)	5/1/2026		\$38.42	\$23.87	\$62.29
Truckdriver class 2 (see notes)	5/1/2024		\$36.74	\$22.54	\$59.28
Truckdriver class 2 (see notes)	5/1/2026		\$38.52	\$23.87	\$62.39
Truckdriver class 3 (see notes)	5/1/2026		\$38.77	\$23.87	\$62.64

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project Name:	Interior/Exterior Renovations and Upgrades at New Eagle Elementary School
General Description:	Replacement of interior stair rails. New terrazzo flooring in cafeteria. Repair of entrance canopy fascia.
Project Locality	507 Pugh Road, Wayne, PA 19087
Awarding Agency:	Tredyffrin Easttown School District
Contract Award Date:	11/23/2026
Serial Number:	26-08391
Project Classification:	Building
Determination Date:	9/17/2026
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Chester County

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08391 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/1/2025		\$60.84	\$48.71	\$109.55
Asbestos & Insulation Workers	5/1/2026		\$64.51	\$50.26	\$114.77
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$54.59	\$29.02	\$83.61
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$47.47	\$29.02	\$76.49
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$23.74	\$20.62	\$44.36
Carpenters	5/1/2026		\$48.55	\$30.39	\$78.94
Carpenters	5/1/2027		\$50.46	\$30.74	\$81.20
Carpenters	5/1/2028		\$52.43	\$31.09	\$83.52
Carpenters	5/1/2029		\$54.46	\$31.44	\$85.90
Carpenters	5/1/2030		\$56.55	\$31.79	\$88.34
Cement Finishers & Plasterers	5/1/2022		\$38.57	\$32.39	\$70.96
Cement Masons	5/1/2024		\$46.70	\$32.46	\$79.16
Cement Masons	5/1/2025		\$48.70	\$32.46	\$81.16
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Drywall Finisher	5/1/2025		\$40.14	\$32.35	\$72.49
Drywall Finisher	5/1/2026		\$41.10	\$32.99	\$74.09
Electricians	5/1/2025		\$58.63	\$47.28	\$105.91
Electricians	5/1/2026		\$62.41	\$48.50	\$110.91
Electricians	5/1/2027		\$66.53	\$50.63	\$117.16
Electricians	5/1/2028		\$70.83	\$52.83	\$123.66
Elevator Constructor	1/1/2025		\$71.85	\$45.77	\$117.62
Elevator Constructor	1/1/2026		\$74.86	\$46.86	\$121.72
Floor Coverer	5/1/2025		\$51.67	\$31.69	\$83.36
Floor Coverer	5/1/2026		\$52.84	\$32.86	\$85.70
Glazier	5/1/2025		\$49.96	\$38.34	\$88.30
Glazier	5/1/2026		\$51.30	\$39.37	\$90.67
Interior Finish	5/1/2023		\$34.60	\$25.80	\$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2025		\$44.77	\$36.27	\$81.04
Iron Workers (Riggers)	7/1/2026		\$48.84	\$36.52	\$85.36
Iron Workers (Rodman/Reinforcing)	7/1/2024		\$47.70	\$34.77	\$82.47
Iron Workers (Rodman/Reinforcing)	7/1/2025		\$47.80	\$36.65	\$84.45
Iron Workers (Rodman/Reinforcing)	7/1/2026		\$52.39	\$36.90	\$89.29
Laborers (Class 01 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Laborers (Class 02 - See notes)	5/1/2025		\$41.00	\$27.70	\$68.70
Laborers (Class 03 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 04 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 05 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Landscape Laborer	5/1/2025		\$32.15	\$24.30	\$56.45

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08391 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Marble Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Marble Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Marble Mason	5/1/2023		\$47.20	\$31.95	\$79.15
Marble Setter	5/1/2026		\$51.50	\$33.80	\$85.30
Mason Tender, Cement	5/1/2023		\$35.02	\$25.98	\$61.00
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators (Building, Class 01 - See Notes)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators (Building, Class 01 - See Notes)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators (Building, Class 01A - See Notes)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators (Building, Class 01A - See Notes)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators (Building, Class 02 - See Notes)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators (Building, Class 02 - See Notes)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators (Building, Class 02A - See Notes)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators (Building, Class 02A - See Notes)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators (Building, Class 03 - See Notes)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators (Building, Class 03 - See Notes)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators (Building, Class 04 - See Notes)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators (Building, Class 04 - See Notes)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators (Building, Class 05 - See Notes)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators (Building, Class 05 - See Notes)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators (Building, Class 06 - See Notes)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators (Building, Class 06 - See Notes)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators (Building, Class 07A- See Notes)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators (Building, Class 07A- See Notes)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators (Building, Class 07B- See Notes)	5/1/2025		\$65.97	\$39.46	\$105.43
Operators (Building, Class 07B- See Notes)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters Class 1 (see notes)	5/1/2025		\$44.38	\$34.55	\$78.93
Painters Class 1 (see notes)	5/1/2026		\$45.71	\$35.22	\$80.93
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 4 (see notes)	5/1/2025		\$46.47	\$34.55	\$81.02
Painters Class 4 (see notes)	5/1/2026		\$48.45	\$35.22	\$83.67
Plasterers	5/1/2024		\$39.88	\$33.08	\$72.96
plumber	5/1/2025		\$70.53	\$39.46	\$109.99
plumber	5/1/2026		\$73.73	\$40.36	\$114.09
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Pointers, Caulkers, Cleaners	5/1/2026		\$53.35	\$32.30	\$85.65
Roofers (Composition)	5/1/2025		\$46.03	\$34.77	\$80.80
Roofers (Composition)	5/1/2026		\$47.53	\$35.22	\$82.75
Roofers (Shingle)	5/1/2024		\$34.35	\$22.20	\$56.55
Roofers (Slate & Tile)	5/1/2024		\$37.35	\$22.20	\$59.55
Sheet Metal Workers	5/1/2025		\$62.62	\$52.17	\$114.79
Sheet Metal Workers	5/1/2026		\$65.06	\$54.48	\$119.54

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08391 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sign Makers and Hangars	7/15/2025		\$33.48	\$26.41	\$59.89
Sign Makers and Hangars	7/15/2026		\$36.38	\$25.01	\$61.39
Sprinklerfitters	1/1/2023		\$62.23	\$31.99	\$94.22
Sprinklerfitters	5/1/2025		\$70.37	\$34.85	\$105.22
Steamfitters	5/1/2024		\$70.32	\$43.09	\$113.41
Steamfitters	5/1/2025		\$72.52	\$44.89	\$117.41
Stone Masons	5/1/2025		\$50.00	\$32.80	\$82.80
Stone Masons	5/1/2026		\$51.50	\$33.80	\$85.30
Terrazzo Finisher	5/1/2025		\$45.61	\$29.41	\$75.02
Terrazzo Finisher	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Grinder	5/1/2025		\$45.88	\$29.41	\$75.29
Terrazzo Grinder	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Mechanics	5/1/2025		\$52.21	\$31.26	\$83.47
Terrazzo Mechanics	5/1/2026		\$53.36	\$32.61	\$85.97
Tile Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Tile Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Tile Setter	5/1/2025		\$52.21	\$31.26	\$83.47
Tile Setter	5/1/2026		\$53.36	\$32.61	\$85.97
Truckdriver class 1(see notes)	5/1/2024		\$36.79	\$22.54	\$59.33
Truckdriver class 1(see notes)	5/1/2026		\$38.57	\$23.87	\$62.44
Truckdriver class 2 (see notes)	5/1/2024		\$36.89	\$22.54	\$59.43
Truckdriver class 2 (see notes)	5/1/2026		\$38.67	\$23.87	\$62.54
Truckdriver class 3 (see notes)	5/1/2026		\$38.92	\$23.87	\$62.79
Window Film / Tint Installer	6/1/2025		\$27.42	\$15.13	\$42.55

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08391 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$65.96	\$30.09	\$96.05
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		\$67.52	\$30.44	\$97.96
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$58.39	\$29.06	\$87.45
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		\$60.09	\$29.06	\$89.15
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$45.88	\$23.19	\$69.07
Carpenter - Rodman (Surveying & Layout)	5/1/2026		\$46.97	\$23.54	\$70.51
Carpenter	5/1/2025		\$57.36	\$30.09	\$87.45
Carpenter	5/1/2026		\$58.71	\$30.44	\$89.15
Cement Masons	5/1/2023		\$43.20	\$32.91	\$76.11
Cement Masons	5/1/2025		\$46.55	\$32.66	\$79.21
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$61.88	\$45.47	\$107.35
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Electric Lineman	6/3/2024		\$62.07	\$33.96	\$96.03
Electric Lineman	6/2/2025		\$65.10	\$34.45	\$99.55
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2023		\$42.53	\$34.14	\$76.67
Iron Workers (Rodman/Reinforcing)	7/1/2023		\$45.70	\$34.77	\$80.47
Laborers (Class 01 - See notes)	5/1/2025		\$40.20	\$27.80	\$68.00
Laborers (Class 01 - See notes)	5/1/2026		\$41.65	\$27.90	\$69.55
Laborers (Class 02 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 02 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 03 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 03 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 04 - See notes)	5/1/2025		\$35.00	\$27.80	\$62.80
Laborers (Class 04 - See notes)	5/1/2026		\$36.45	\$27.90	\$64.35
Laborers (Class 05 - See notes)	5/1/2025		\$41.05	\$27.80	\$68.85
Laborers (Class 05 - See notes)	5/1/2026		\$42.50	\$27.90	\$70.40
Laborers (Class 06 - See notes)	5/1/2025		\$41.10	\$27.80	\$68.90
Laborers (Class 06 - See notes)	5/1/2026		\$42.55	\$27.90	\$70.45
Laborers (Class 07 - See notes)	5/1/2025		\$40.95	\$27.80	\$68.75
Laborers (Class 07 - See notes)	5/1/2026		\$42.40	\$27.90	\$70.30
Laborers (Class 08 - See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 08 - See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 09 - See notes)	5/1/2025		\$40.55	\$27.80	\$68.35
Laborers (Class 09 - See notes)	5/1/2026		\$42.00	\$27.90	\$69.90
Laborers (Class 10- See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 10- See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 11 -See Notes)	5/1/2025		\$40.60	\$27.80	\$68.40
Laborers (Class 11 -See Notes)	5/1/2026		\$42.05	\$27.90	\$69.95
Laborers (Class 12 -See Notes)	5/1/2025		\$42.30	\$27.80	\$70.10
Laborers (Class 12 -See Notes)	5/1/2026		\$42.85	\$27.90	\$70.75

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08391 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 13 -See Notes)	5/1/2025		\$44.33	\$27.80	\$72.13
Laborers (Class 13 -See Notes)	5/1/2026		\$45.78	\$27.90	\$73.68
Laborers (Class 14 -See Notes)	5/1/2025		\$40.90	\$27.80	\$68.70
Laborers (Class 14 -See Notes)	5/1/2026		\$41.90	\$27.90	\$69.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2025		\$34.07	\$19.73	\$53.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2026		\$35.52	\$19.83	\$55.35
Laborers Utility (PGW ONLY)	5/1/2024		\$39.70	\$19.63	\$59.33
Laborers Utility (PGW ONLY)	5/1/2025		\$41.10	\$19.73	\$60.83
Laborers Utility (PGW ONLY)	5/1/2026		\$42.55	\$19.83	\$62.38
Landscape Laborer	5/1/2024		\$30.28	\$24.05	\$54.33
Landscape Laborer	5/1/2025		\$31.73	\$24.15	\$55.88
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		\$65.97	\$39.46	\$105.43

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08391 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 2 (see notes)	2/1/2025		\$50.85	\$33.91	\$84.76
Painters Class 2 (see notes)	2/1/2026		\$51.61	\$35.00	\$86.61
Painters Class 3 (see notes)	2/1/2025		\$61.81	\$33.95	\$95.76
Painters Class 3 (see notes)	2/1/2026		\$62.57	\$35.04	\$97.61
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2025		\$68.89	\$44.73	\$113.62
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Truckdriver class 1(see notes)	5/1/2024		\$36.64	\$22.54	\$59.18
Truckdriver class 1(see notes)	5/1/2026		\$38.42	\$23.87	\$62.29
Truckdriver class 2 (see notes)	5/1/2024		\$36.74	\$22.54	\$59.28
Truckdriver class 2 (see notes)	5/1/2026		\$38.52	\$23.87	\$62.39
Truckdriver class 3 (see notes)	5/1/2026		\$38.77	\$23.87	\$62.64

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project Name:	Interior/Exterior Renovations and Upgrades at Valley Forge Elementary School
General Description:	Localized facade repairs at brick and stucco locations
Project Locality	99 Walker Road, Wayne, PA 1908
Awarding Agency:	Tredyffrin Easttown School District
Contract Award Date:	11/23/2026
Serial Number:	26-08392
Project Classification:	Building
Determination Date:	9/17/2026
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Chester County

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08392 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/1/2025		\$60.84	\$48.71	\$109.55
Asbestos & Insulation Workers	5/1/2026		\$64.51	\$50.26	\$114.77
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$54.59	\$29.02	\$83.61
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$47.47	\$29.02	\$76.49
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$23.74	\$20.62	\$44.36
Carpenters	5/1/2026		\$48.55	\$30.39	\$78.94
Carpenters	5/1/2027		\$50.46	\$30.74	\$81.20
Carpenters	5/1/2028		\$52.43	\$31.09	\$83.52
Carpenters	5/1/2029		\$54.46	\$31.44	\$85.90
Carpenters	5/1/2030		\$56.55	\$31.79	\$88.34
Cement Finishers & Plasterers	5/1/2022		\$38.57	\$32.39	\$70.96
Cement Masons	5/1/2024		\$46.70	\$32.46	\$79.16
Cement Masons	5/1/2025		\$48.70	\$32.46	\$81.16
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Drywall Finisher	5/1/2025		\$40.14	\$32.35	\$72.49
Drywall Finisher	5/1/2026		\$41.10	\$32.99	\$74.09
Electricians	5/1/2025		\$58.63	\$47.28	\$105.91
Electricians	5/1/2026		\$62.41	\$48.50	\$110.91
Electricians	5/1/2027		\$66.53	\$50.63	\$117.16
Electricians	5/1/2028		\$70.83	\$52.83	\$123.66
Elevator Constructor	1/1/2025		\$71.85	\$45.77	\$117.62
Elevator Constructor	1/1/2026		\$74.86	\$46.86	\$121.72
Floor Coverer	5/1/2025		\$51.67	\$31.69	\$83.36
Floor Coverer	5/1/2026		\$52.84	\$32.86	\$85.70
Glazier	5/1/2025		\$49.96	\$38.34	\$88.30
Glazier	5/1/2026		\$51.30	\$39.37	\$90.67
Interior Finish	5/1/2023		\$34.60	\$25.80	\$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2025		\$44.77	\$36.27	\$81.04
Iron Workers (Riggers)	7/1/2026		\$48.84	\$36.52	\$85.36
Iron Workers (Rodman/Reinforcing)	7/1/2024		\$47.70	\$34.77	\$82.47
Iron Workers (Rodman/Reinforcing)	7/1/2025		\$47.80	\$36.65	\$84.45
Iron Workers (Rodman/Reinforcing)	7/1/2026		\$52.39	\$36.90	\$89.29
Laborers (Class 01 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Laborers (Class 02 - See notes)	5/1/2025		\$41.00	\$27.70	\$68.70
Laborers (Class 03 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 04 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 05 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Landscape Laborer	5/1/2025		\$32.15	\$24.30	\$56.45

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08392 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Marble Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Marble Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Marble Mason	5/1/2023		\$47.20	\$31.95	\$79.15
Marble Setter	5/1/2026		\$51.50	\$33.80	\$85.30
Mason Tender, Cement	5/1/2023		\$35.02	\$25.98	\$61.00
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators (Building, Class 01 - See Notes)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators (Building, Class 01 - See Notes)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators (Building, Class 01A - See Notes)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators (Building, Class 01A - See Notes)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators (Building, Class 02 - See Notes)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators (Building, Class 02 - See Notes)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators (Building, Class 02A - See Notes)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators (Building, Class 02A - See Notes)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators (Building, Class 03 - See Notes)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators (Building, Class 03 - See Notes)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators (Building, Class 04 - See Notes)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators (Building, Class 04 - See Notes)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators (Building, Class 05 - See Notes)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators (Building, Class 05 - See Notes)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators (Building, Class 06 - See Notes)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators (Building, Class 06 - See Notes)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators (Building, Class 07A- See Notes)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators (Building, Class 07A- See Notes)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators (Building, Class 07B- See Notes)	5/1/2025		\$65.97	\$39.46	\$105.43
Operators (Building, Class 07B- See Notes)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters Class 1 (see notes)	5/1/2025		\$44.38	\$34.55	\$78.93
Painters Class 1 (see notes)	5/1/2026		\$45.71	\$35.22	\$80.93
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 4 (see notes)	5/1/2025		\$46.47	\$34.55	\$81.02
Painters Class 4 (see notes)	5/1/2026		\$48.45	\$35.22	\$83.67
Plasterers	5/1/2024		\$39.88	\$33.08	\$72.96
plumber	5/1/2025		\$70.53	\$39.46	\$109.99
plumber	5/1/2026		\$73.73	\$40.36	\$114.09
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Pointers, Caulkers, Cleaners	5/1/2026		\$53.35	\$32.30	\$85.65
Roofers (Composition)	5/1/2025		\$46.03	\$34.77	\$80.80
Roofers (Composition)	5/1/2026		\$47.53	\$35.22	\$82.75
Roofers (Shingle)	5/1/2024		\$34.35	\$22.20	\$56.55
Roofers (Slate & Tile)	5/1/2024		\$37.35	\$22.20	\$59.55
Sheet Metal Workers	5/1/2025		\$62.62	\$52.17	\$114.79
Sheet Metal Workers	5/1/2026		\$65.06	\$54.48	\$119.54

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08392 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sign Makers and Hangars	7/15/2025		\$33.48	\$26.41	\$59.89
Sign Makers and Hangars	7/15/2026		\$36.38	\$25.01	\$61.39
Sprinklerfitters	1/1/2023		\$62.23	\$31.99	\$94.22
Sprinklerfitters	5/1/2025		\$70.37	\$34.85	\$105.22
Steamfitters	5/1/2024		\$70.32	\$43.09	\$113.41
Steamfitters	5/1/2025		\$72.52	\$44.89	\$117.41
Stone Masons	5/1/2025		\$50.00	\$32.80	\$82.80
Stone Masons	5/1/2026		\$51.50	\$33.80	\$85.30
Terrazzo Finisher	5/1/2025		\$45.61	\$29.41	\$75.02
Terrazzo Finisher	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Grinder	5/1/2025		\$45.88	\$29.41	\$75.29
Terrazzo Grinder	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Mechanics	5/1/2025		\$52.21	\$31.26	\$83.47
Terrazzo Mechanics	5/1/2026		\$53.36	\$32.61	\$85.97
Tile Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Tile Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Tile Setter	5/1/2025		\$52.21	\$31.26	\$83.47
Tile Setter	5/1/2026		\$53.36	\$32.61	\$85.97
Truckdriver class 1(see notes)	5/1/2024		\$36.79	\$22.54	\$59.33
Truckdriver class 1(see notes)	5/1/2026		\$38.57	\$23.87	\$62.44
Truckdriver class 2 (see notes)	5/1/2024		\$36.89	\$22.54	\$59.43
Truckdriver class 2 (see notes)	5/1/2026		\$38.67	\$23.87	\$62.54
Truckdriver class 3 (see notes)	5/1/2026		\$38.92	\$23.87	\$62.79
Window Film / Tint Installer	6/1/2025		\$27.42	\$15.13	\$42.55

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08392 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$65.96	\$30.09	\$96.05
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		\$67.52	\$30.44	\$97.96
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$58.39	\$29.06	\$87.45
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		\$60.09	\$29.06	\$89.15
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$45.88	\$23.19	\$69.07
Carpenter - Rodman (Surveying & Layout)	5/1/2026		\$46.97	\$23.54	\$70.51
Carpenter	5/1/2025		\$57.36	\$30.09	\$87.45
Carpenter	5/1/2026		\$58.71	\$30.44	\$89.15
Cement Masons	5/1/2023		\$43.20	\$32.91	\$76.11
Cement Masons	5/1/2025		\$46.55	\$32.66	\$79.21
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$61.88	\$45.47	\$107.35
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Electric Lineman	6/3/2024		\$62.07	\$33.96	\$96.03
Electric Lineman	6/2/2025		\$65.10	\$34.45	\$99.55
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2023		\$42.53	\$34.14	\$76.67
Iron Workers (Rodman/Reinforcing)	7/1/2023		\$45.70	\$34.77	\$80.47
Laborers (Class 01 - See notes)	5/1/2025		\$40.20	\$27.80	\$68.00
Laborers (Class 01 - See notes)	5/1/2026		\$41.65	\$27.90	\$69.55
Laborers (Class 02 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 02 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 03 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 03 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 04 - See notes)	5/1/2025		\$35.00	\$27.80	\$62.80
Laborers (Class 04 - See notes)	5/1/2026		\$36.45	\$27.90	\$64.35
Laborers (Class 05 - See notes)	5/1/2025		\$41.05	\$27.80	\$68.85
Laborers (Class 05 - See notes)	5/1/2026		\$42.50	\$27.90	\$70.40
Laborers (Class 06 - See notes)	5/1/2025		\$41.10	\$27.80	\$68.90
Laborers (Class 06 - See notes)	5/1/2026		\$42.55	\$27.90	\$70.45
Laborers (Class 07 - See notes)	5/1/2025		\$40.95	\$27.80	\$68.75
Laborers (Class 07 - See notes)	5/1/2026		\$42.40	\$27.90	\$70.30
Laborers (Class 08 - See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 08 - See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 09 - See notes)	5/1/2025		\$40.55	\$27.80	\$68.35
Laborers (Class 09 - See notes)	5/1/2026		\$42.00	\$27.90	\$69.90
Laborers (Class 10- See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 10- See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 11 -See Notes)	5/1/2025		\$40.60	\$27.80	\$68.40
Laborers (Class 11 -See Notes)	5/1/2026		\$42.05	\$27.90	\$69.95
Laborers (Class 12 -See Notes)	5/1/2025		\$42.30	\$27.80	\$70.10
Laborers (Class 12 -See Notes)	5/1/2026		\$42.85	\$27.90	\$70.75

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08392 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 13 -See Notes)	5/1/2025		\$44.33	\$27.80	\$72.13
Laborers (Class 13 -See Notes)	5/1/2026		\$45.78	\$27.90	\$73.68
Laborers (Class 14 -See Notes)	5/1/2025		\$40.90	\$27.80	\$68.70
Laborers (Class 14 -See Notes)	5/1/2026		\$41.90	\$27.90	\$69.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2025		\$34.07	\$19.73	\$53.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2026		\$35.52	\$19.83	\$55.35
Laborers Utility (PGW ONLY)	5/1/2024		\$39.70	\$19.63	\$59.33
Laborers Utility (PGW ONLY)	5/1/2025		\$41.10	\$19.73	\$60.83
Laborers Utility (PGW ONLY)	5/1/2026		\$42.55	\$19.83	\$62.38
Landscape Laborer	5/1/2024		\$30.28	\$24.05	\$54.33
Landscape Laborer	5/1/2025		\$31.73	\$24.15	\$55.88
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		\$65.97	\$39.46	\$105.43

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08392 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 2 (see notes)	2/1/2025		\$50.85	\$33.91	\$84.76
Painters Class 2 (see notes)	2/1/2026		\$51.61	\$35.00	\$86.61
Painters Class 3 (see notes)	2/1/2025		\$61.81	\$33.95	\$95.76
Painters Class 3 (see notes)	2/1/2026		\$62.57	\$35.04	\$97.61
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2025		\$68.89	\$44.73	\$113.62
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Truckdriver class 1(see notes)	5/1/2024		\$36.64	\$22.54	\$59.18
Truckdriver class 1(see notes)	5/1/2026		\$38.42	\$23.87	\$62.29
Truckdriver class 2 (see notes)	5/1/2024		\$36.74	\$22.54	\$59.28
Truckdriver class 2 (see notes)	5/1/2026		\$38.52	\$23.87	\$62.39
Truckdriver class 3 (see notes)	5/1/2026		\$38.77	\$23.87	\$62.64

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project Name:	Interior/Exterior Renovations and Upgrades at Tredyffrin/Easttown Middle School
General Description:	Localized facade repairs at brick locations. Repair and replacement of cafeteria exterior soffit panels.
Project Locality	801 Conestoga Road, Berwyn, PA
Awarding Agency:	Tredyffrin Easttown School District
Contract Award Date:	11/23/2026
Serial Number:	26-08393
Project Classification:	Building
Determination Date:	9/17/2026
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Chester County

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08393 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/1/2025		\$60.84	\$48.71	\$109.55
Asbestos & Insulation Workers	5/1/2026		\$64.51	\$50.26	\$114.77
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$54.59	\$29.02	\$83.61
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$47.47	\$29.02	\$76.49
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$23.74	\$20.62	\$44.36
Carpenters	5/1/2026		\$48.55	\$30.39	\$78.94
Carpenters	5/1/2027		\$50.46	\$30.74	\$81.20
Carpenters	5/1/2028		\$52.43	\$31.09	\$83.52
Carpenters	5/1/2029		\$54.46	\$31.44	\$85.90
Carpenters	5/1/2030		\$56.55	\$31.79	\$88.34
Cement Finishers & Plasterers	5/1/2022		\$38.57	\$32.39	\$70.96
Cement Masons	5/1/2024		\$46.70	\$32.46	\$79.16
Cement Masons	5/1/2025		\$48.70	\$32.46	\$81.16
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Drywall Finisher	5/1/2025		\$40.14	\$32.35	\$72.49
Drywall Finisher	5/1/2026		\$41.10	\$32.99	\$74.09
Electricians	5/1/2025		\$58.63	\$47.28	\$105.91
Electricians	5/1/2026		\$62.41	\$48.50	\$110.91
Electricians	5/1/2027		\$66.53	\$50.63	\$117.16
Electricians	5/1/2028		\$70.83	\$52.83	\$123.66
Elevator Constructor	1/1/2025		\$71.85	\$45.77	\$117.62
Elevator Constructor	1/1/2026		\$74.86	\$46.86	\$121.72
Floor Coverer	5/1/2025		\$51.67	\$31.69	\$83.36
Floor Coverer	5/1/2026		\$52.84	\$32.86	\$85.70
Glazier	5/1/2025		\$49.96	\$38.34	\$88.30
Glazier	5/1/2026		\$51.30	\$39.37	\$90.67
Interior Finish	5/1/2023		\$34.60	\$25.80	\$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2025		\$44.77	\$36.27	\$81.04
Iron Workers (Riggers)	7/1/2026		\$48.84	\$36.52	\$85.36
Iron Workers (Rodman/Reinforcing)	7/1/2024		\$47.70	\$34.77	\$82.47
Iron Workers (Rodman/Reinforcing)	7/1/2025		\$47.80	\$36.65	\$84.45
Iron Workers (Rodman/Reinforcing)	7/1/2026		\$52.39	\$36.90	\$89.29
Laborers (Class 01 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Laborers (Class 02 - See notes)	5/1/2025		\$41.00	\$27.70	\$68.70
Laborers (Class 03 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 04 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 05 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Landscape Laborer	5/1/2025		\$32.15	\$24.30	\$56.45

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08393 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Marble Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Marble Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Marble Mason	5/1/2023		\$47.20	\$31.95	\$79.15
Marble Setter	5/1/2026		\$51.50	\$33.80	\$85.30
Mason Tender, Cement	5/1/2023		\$35.02	\$25.98	\$61.00
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators (Building, Class 01 - See Notes)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators (Building, Class 01 - See Notes)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators (Building, Class 01A - See Notes)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators (Building, Class 01A - See Notes)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators (Building, Class 02 - See Notes)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators (Building, Class 02 - See Notes)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators (Building, Class 02A - See Notes)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators (Building, Class 02A - See Notes)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators (Building, Class 03 - See Notes)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators (Building, Class 03 - See Notes)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators (Building, Class 04 - See Notes)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators (Building, Class 04 - See Notes)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators (Building, Class 05 - See Notes)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators (Building, Class 05 - See Notes)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators (Building, Class 06 - See Notes)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators (Building, Class 06 - See Notes)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators (Building, Class 07A- See Notes)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators (Building, Class 07A- See Notes)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators (Building, Class 07B- See Notes)	5/1/2025		\$65.97	\$39.46	\$105.43
Operators (Building, Class 07B- See Notes)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters Class 1 (see notes)	5/1/2025		\$44.38	\$34.55	\$78.93
Painters Class 1 (see notes)	5/1/2026		\$45.71	\$35.22	\$80.93
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 4 (see notes)	5/1/2025		\$46.47	\$34.55	\$81.02
Painters Class 4 (see notes)	5/1/2026		\$48.45	\$35.22	\$83.67
Plasterers	5/1/2024		\$39.88	\$33.08	\$72.96
plumber	5/1/2025		\$70.53	\$39.46	\$109.99
plumber	5/1/2026		\$73.73	\$40.36	\$114.09
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Pointers, Caulkers, Cleaners	5/1/2026		\$53.35	\$32.30	\$85.65
Roofers (Composition)	5/1/2025		\$46.03	\$34.77	\$80.80
Roofers (Composition)	5/1/2026		\$47.53	\$35.22	\$82.75
Roofers (Shingle)	5/1/2024		\$34.35	\$22.20	\$56.55
Roofers (Slate & Tile)	5/1/2024		\$37.35	\$22.20	\$59.55
Sheet Metal Workers	5/1/2025		\$62.62	\$52.17	\$114.79
Sheet Metal Workers	5/1/2026		\$65.06	\$54.48	\$119.54

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08393 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sign Makers and Hangars	7/15/2025		\$33.48	\$26.41	\$59.89
Sign Makers and Hangars	7/15/2026		\$36.38	\$25.01	\$61.39
Sprinklerfitters	1/1/2023		\$62.23	\$31.99	\$94.22
Sprinklerfitters	5/1/2025		\$70.37	\$34.85	\$105.22
Steamfitters	5/1/2024		\$70.32	\$43.09	\$113.41
Steamfitters	5/1/2025		\$72.52	\$44.89	\$117.41
Stone Masons	5/1/2025		\$50.00	\$32.80	\$82.80
Stone Masons	5/1/2026		\$51.50	\$33.80	\$85.30
Terrazzo Finisher	5/1/2025		\$45.61	\$29.41	\$75.02
Terrazzo Finisher	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Grinder	5/1/2025		\$45.88	\$29.41	\$75.29
Terrazzo Grinder	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Mechanics	5/1/2025		\$52.21	\$31.26	\$83.47
Terrazzo Mechanics	5/1/2026		\$53.36	\$32.61	\$85.97
Tile Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Tile Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Tile Setter	5/1/2025		\$52.21	\$31.26	\$83.47
Tile Setter	5/1/2026		\$53.36	\$32.61	\$85.97
Truckdriver class 1(see notes)	5/1/2024		\$36.79	\$22.54	\$59.33
Truckdriver class 1(see notes)	5/1/2026		\$38.57	\$23.87	\$62.44
Truckdriver class 2 (see notes)	5/1/2024		\$36.89	\$22.54	\$59.43
Truckdriver class 2 (see notes)	5/1/2026		\$38.67	\$23.87	\$62.54
Truckdriver class 3 (see notes)	5/1/2026		\$38.92	\$23.87	\$62.79
Window Film / Tint Installer	6/1/2025		\$27.42	\$15.13	\$42.55

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08393 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$65.96	\$30.09	\$96.05
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		\$67.52	\$30.44	\$97.96
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$58.39	\$29.06	\$87.45
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		\$60.09	\$29.06	\$89.15
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$45.88	\$23.19	\$69.07
Carpenter - Rodman (Surveying & Layout)	5/1/2026		\$46.97	\$23.54	\$70.51
Carpenter	5/1/2025		\$57.36	\$30.09	\$87.45
Carpenter	5/1/2026		\$58.71	\$30.44	\$89.15
Cement Masons	5/1/2023		\$43.20	\$32.91	\$76.11
Cement Masons	5/1/2025		\$46.55	\$32.66	\$79.21
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$61.88	\$45.47	\$107.35
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Electric Lineman	6/3/2024		\$62.07	\$33.96	\$96.03
Electric Lineman	6/2/2025		\$65.10	\$34.45	\$99.55
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2023		\$42.53	\$34.14	\$76.67
Iron Workers (Rodman/Reinforcing)	7/1/2023		\$45.70	\$34.77	\$80.47
Laborers (Class 01 - See notes)	5/1/2025		\$40.20	\$27.80	\$68.00
Laborers (Class 01 - See notes)	5/1/2026		\$41.65	\$27.90	\$69.55
Laborers (Class 02 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 02 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 03 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 03 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 04 - See notes)	5/1/2025		\$35.00	\$27.80	\$62.80
Laborers (Class 04 - See notes)	5/1/2026		\$36.45	\$27.90	\$64.35
Laborers (Class 05 - See notes)	5/1/2025		\$41.05	\$27.80	\$68.85
Laborers (Class 05 - See notes)	5/1/2026		\$42.50	\$27.90	\$70.40
Laborers (Class 06 - See notes)	5/1/2025		\$41.10	\$27.80	\$68.90
Laborers (Class 06 - See notes)	5/1/2026		\$42.55	\$27.90	\$70.45
Laborers (Class 07 - See notes)	5/1/2025		\$40.95	\$27.80	\$68.75
Laborers (Class 07 - See notes)	5/1/2026		\$42.40	\$27.90	\$70.30
Laborers (Class 08 - See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 08 - See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 09 - See notes)	5/1/2025		\$40.55	\$27.80	\$68.35
Laborers (Class 09 - See notes)	5/1/2026		\$42.00	\$27.90	\$69.90
Laborers (Class 10- See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 10- See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 11 -See Notes)	5/1/2025		\$40.60	\$27.80	\$68.40
Laborers (Class 11 -See Notes)	5/1/2026		\$42.05	\$27.90	\$69.95
Laborers (Class 12 -See Notes)	5/1/2025		\$42.30	\$27.80	\$70.10
Laborers (Class 12 -See Notes)	5/1/2026		\$42.85	\$27.90	\$70.75

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08393 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 13 -See Notes)	5/1/2025		\$44.33	\$27.80	\$72.13
Laborers (Class 13 -See Notes)	5/1/2026		\$45.78	\$27.90	\$73.68
Laborers (Class 14 -See Notes)	5/1/2025		\$40.90	\$27.80	\$68.70
Laborers (Class 14 -See Notes)	5/1/2026		\$41.90	\$27.90	\$69.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2025		\$34.07	\$19.73	\$53.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2026		\$35.52	\$19.83	\$55.35
Laborers Utility (PGW ONLY)	5/1/2024		\$39.70	\$19.63	\$59.33
Laborers Utility (PGW ONLY)	5/1/2025		\$41.10	\$19.73	\$60.83
Laborers Utility (PGW ONLY)	5/1/2026		\$42.55	\$19.83	\$62.38
Landscape Laborer	5/1/2024		\$30.28	\$24.05	\$54.33
Landscape Laborer	5/1/2025		\$31.73	\$24.15	\$55.88
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		\$65.97	\$39.46	\$105.43

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08393 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 2 (see notes)	2/1/2025		\$50.85	\$33.91	\$84.76
Painters Class 2 (see notes)	2/1/2026		\$51.61	\$35.00	\$86.61
Painters Class 3 (see notes)	2/1/2025		\$61.81	\$33.95	\$95.76
Painters Class 3 (see notes)	2/1/2026		\$62.57	\$35.04	\$97.61
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2025		\$68.89	\$44.73	\$113.62
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Truckdriver class 1(see notes)	5/1/2024		\$36.64	\$22.54	\$59.18
Truckdriver class 1(see notes)	5/1/2026		\$38.42	\$23.87	\$62.29
Truckdriver class 2 (see notes)	5/1/2024		\$36.74	\$22.54	\$59.28
Truckdriver class 2 (see notes)	5/1/2026		\$38.52	\$23.87	\$62.39
Truckdriver class 3 (see notes)	5/1/2026		\$38.77	\$23.87	\$62.64

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project Name:	Interior/Exterior Renovations and Upgrades at Valley Forge Middle School
General Description:	Localized facade repairs at brick locations. Repair and replacement of exterior soffit panel joints.
Project Locality	105 W. Walker Road, Wayne, PA
Awarding Agency:	Tredyffrin Easttown School District
Contract Award Date:	11/23/2026
Serial Number:	26-08395
Project Classification:	Building
Determination Date:	9/17/2026
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Chester County

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08395 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/1/2025		\$60.84	\$48.71	\$109.55
Asbestos & Insulation Workers	5/1/2026		\$64.51	\$50.26	\$114.77
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$54.59	\$29.02	\$83.61
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$47.47	\$29.02	\$76.49
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$23.74	\$20.62	\$44.36
Carpenters	5/1/2026		\$48.55	\$30.39	\$78.94
Carpenters	5/1/2027		\$50.46	\$30.74	\$81.20
Carpenters	5/1/2028		\$52.43	\$31.09	\$83.52
Carpenters	5/1/2029		\$54.46	\$31.44	\$85.90
Carpenters	5/1/2030		\$56.55	\$31.79	\$88.34
Cement Finishers & Plasterers	5/1/2022		\$38.57	\$32.39	\$70.96
Cement Masons	5/1/2024		\$46.70	\$32.46	\$79.16
Cement Masons	5/1/2025		\$48.70	\$32.46	\$81.16
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Drywall Finisher	5/1/2025		\$40.14	\$32.35	\$72.49
Drywall Finisher	5/1/2026		\$41.10	\$32.99	\$74.09
Electricians	5/1/2025		\$58.63	\$47.28	\$105.91
Electricians	5/1/2026		\$62.41	\$48.50	\$110.91
Electricians	5/1/2027		\$66.53	\$50.63	\$117.16
Electricians	5/1/2028		\$70.83	\$52.83	\$123.66
Elevator Constructor	1/1/2025		\$71.85	\$45.77	\$117.62
Elevator Constructor	1/1/2026		\$74.86	\$46.86	\$121.72
Floor Coverer	5/1/2025		\$51.67	\$31.69	\$83.36
Floor Coverer	5/1/2026		\$52.84	\$32.86	\$85.70
Glazier	5/1/2025		\$49.96	\$38.34	\$88.30
Glazier	5/1/2026		\$51.30	\$39.37	\$90.67
Interior Finish	5/1/2023		\$34.60	\$25.80	\$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2025		\$44.77	\$36.27	\$81.04
Iron Workers (Riggers)	7/1/2026		\$48.84	\$36.52	\$85.36
Iron Workers (Rodman/Reinforcing)	7/1/2024		\$47.70	\$34.77	\$82.47
Iron Workers (Rodman/Reinforcing)	7/1/2025		\$47.80	\$36.65	\$84.45
Iron Workers (Rodman/Reinforcing)	7/1/2026		\$52.39	\$36.90	\$89.29
Laborers (Class 01 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Laborers (Class 02 - See notes)	5/1/2025		\$41.00	\$27.70	\$68.70
Laborers (Class 03 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 04 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 05 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Landscape Laborer	5/1/2025		\$32.15	\$24.30	\$56.45

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08395 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Marble Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Marble Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Marble Mason	5/1/2023		\$47.20	\$31.95	\$79.15
Marble Setter	5/1/2026		\$51.50	\$33.80	\$85.30
Mason Tender, Cement	5/1/2023		\$35.02	\$25.98	\$61.00
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators (Building, Class 01 - See Notes)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators (Building, Class 01 - See Notes)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators (Building, Class 01A - See Notes)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators (Building, Class 01A - See Notes)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators (Building, Class 02 - See Notes)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators (Building, Class 02 - See Notes)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators (Building, Class 02A - See Notes)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators (Building, Class 02A - See Notes)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators (Building, Class 03 - See Notes)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators (Building, Class 03 - See Notes)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators (Building, Class 04 - See Notes)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators (Building, Class 04 - See Notes)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators (Building, Class 05 - See Notes)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators (Building, Class 05 - See Notes)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators (Building, Class 06 - See Notes)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators (Building, Class 06 - See Notes)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators (Building, Class 07A- See Notes)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators (Building, Class 07A- See Notes)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators (Building, Class 07B- See Notes)	5/1/2025		\$65.97	\$39.46	\$105.43
Operators (Building, Class 07B- See Notes)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters Class 1 (see notes)	5/1/2025		\$44.38	\$34.55	\$78.93
Painters Class 1 (see notes)	5/1/2026		\$45.71	\$35.22	\$80.93
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 4 (see notes)	5/1/2025		\$46.47	\$34.55	\$81.02
Painters Class 4 (see notes)	5/1/2026		\$48.45	\$35.22	\$83.67
Plasterers	5/1/2024		\$39.88	\$33.08	\$72.96
plumber	5/1/2025		\$70.53	\$39.46	\$109.99
plumber	5/1/2026		\$73.73	\$40.36	\$114.09
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Pointers, Caulkers, Cleaners	5/1/2026		\$53.35	\$32.30	\$85.65
Roofers (Composition)	5/1/2025		\$46.03	\$34.77	\$80.80
Roofers (Composition)	5/1/2026		\$47.53	\$35.22	\$82.75
Roofers (Shingle)	5/1/2024		\$34.35	\$22.20	\$56.55
Roofers (Slate & Tile)	5/1/2024		\$37.35	\$22.20	\$59.55
Sheet Metal Workers	5/1/2025		\$62.62	\$52.17	\$114.79
Sheet Metal Workers	5/1/2026		\$65.06	\$54.48	\$119.54

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08395 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sign Makers and Hangars	7/15/2025		\$33.48	\$26.41	\$59.89
Sign Makers and Hangars	7/15/2026		\$36.38	\$25.01	\$61.39
Sprinklerfitters	1/1/2023		\$62.23	\$31.99	\$94.22
Sprinklerfitters	5/1/2025		\$70.37	\$34.85	\$105.22
Steamfitters	5/1/2024		\$70.32	\$43.09	\$113.41
Steamfitters	5/1/2025		\$72.52	\$44.89	\$117.41
Stone Masons	5/1/2025		\$50.00	\$32.80	\$82.80
Stone Masons	5/1/2026		\$51.50	\$33.80	\$85.30
Terrazzo Finisher	5/1/2025		\$45.61	\$29.41	\$75.02
Terrazzo Finisher	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Grinder	5/1/2025		\$45.88	\$29.41	\$75.29
Terrazzo Grinder	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Mechanics	5/1/2025		\$52.21	\$31.26	\$83.47
Terrazzo Mechanics	5/1/2026		\$53.36	\$32.61	\$85.97
Tile Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Tile Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Tile Setter	5/1/2025		\$52.21	\$31.26	\$83.47
Tile Setter	5/1/2026		\$53.36	\$32.61	\$85.97
Truckdriver class 1(see notes)	5/1/2024		\$36.79	\$22.54	\$59.33
Truckdriver class 1(see notes)	5/1/2026		\$38.57	\$23.87	\$62.44
Truckdriver class 2 (see notes)	5/1/2024		\$36.89	\$22.54	\$59.43
Truckdriver class 2 (see notes)	5/1/2026		\$38.67	\$23.87	\$62.54
Truckdriver class 3 (see notes)	5/1/2026		\$38.92	\$23.87	\$62.79
Window Film / Tint Installer	6/1/2025		\$27.42	\$15.13	\$42.55

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08395 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$65.96	\$30.09	\$96.05
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		\$67.52	\$30.44	\$97.96
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$58.39	\$29.06	\$87.45
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		\$60.09	\$29.06	\$89.15
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$45.88	\$23.19	\$69.07
Carpenter - Rodman (Surveying & Layout)	5/1/2026		\$46.97	\$23.54	\$70.51
Carpenter	5/1/2025		\$57.36	\$30.09	\$87.45
Carpenter	5/1/2026		\$58.71	\$30.44	\$89.15
Cement Masons	5/1/2023		\$43.20	\$32.91	\$76.11
Cement Masons	5/1/2025		\$46.55	\$32.66	\$79.21
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$61.88	\$45.47	\$107.35
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Electric Lineman	6/3/2024		\$62.07	\$33.96	\$96.03
Electric Lineman	6/2/2025		\$65.10	\$34.45	\$99.55
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2023		\$42.53	\$34.14	\$76.67
Iron Workers (Rodman/Reinforcing)	7/1/2023		\$45.70	\$34.77	\$80.47
Laborers (Class 01 - See notes)	5/1/2025		\$40.20	\$27.80	\$68.00
Laborers (Class 01 - See notes)	5/1/2026		\$41.65	\$27.90	\$69.55
Laborers (Class 02 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 02 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 03 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 03 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 04 - See notes)	5/1/2025		\$35.00	\$27.80	\$62.80
Laborers (Class 04 - See notes)	5/1/2026		\$36.45	\$27.90	\$64.35
Laborers (Class 05 - See notes)	5/1/2025		\$41.05	\$27.80	\$68.85
Laborers (Class 05 - See notes)	5/1/2026		\$42.50	\$27.90	\$70.40
Laborers (Class 06 - See notes)	5/1/2025		\$41.10	\$27.80	\$68.90
Laborers (Class 06 - See notes)	5/1/2026		\$42.55	\$27.90	\$70.45
Laborers (Class 07 - See notes)	5/1/2025		\$40.95	\$27.80	\$68.75
Laborers (Class 07 - See notes)	5/1/2026		\$42.40	\$27.90	\$70.30
Laborers (Class 08 - See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 08 - See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 09 - See notes)	5/1/2025		\$40.55	\$27.80	\$68.35
Laborers (Class 09 - See notes)	5/1/2026		\$42.00	\$27.90	\$69.90
Laborers (Class 10- See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 10- See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 11 -See Notes)	5/1/2025		\$40.60	\$27.80	\$68.40
Laborers (Class 11 -See Notes)	5/1/2026		\$42.05	\$27.90	\$69.95
Laborers (Class 12 -See Notes)	5/1/2025		\$42.30	\$27.80	\$70.10
Laborers (Class 12 -See Notes)	5/1/2026		\$42.85	\$27.90	\$70.75

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08395 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 13 -See Notes)	5/1/2025		\$44.33	\$27.80	\$72.13
Laborers (Class 13 -See Notes)	5/1/2026		\$45.78	\$27.90	\$73.68
Laborers (Class 14 -See Notes)	5/1/2025		\$40.90	\$27.80	\$68.70
Laborers (Class 14 -See Notes)	5/1/2026		\$41.90	\$27.90	\$69.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2025		\$34.07	\$19.73	\$53.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2026		\$35.52	\$19.83	\$55.35
Laborers Utility (PGW ONLY)	5/1/2024		\$39.70	\$19.63	\$59.33
Laborers Utility (PGW ONLY)	5/1/2025		\$41.10	\$19.73	\$60.83
Laborers Utility (PGW ONLY)	5/1/2026		\$42.55	\$19.83	\$62.38
Landscape Laborer	5/1/2024		\$30.28	\$24.05	\$54.33
Landscape Laborer	5/1/2025		\$31.73	\$24.15	\$55.88
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		\$65.97	\$39.46	\$105.43

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08395 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 2 (see notes)	2/1/2025		\$50.85	\$33.91	\$84.76
Painters Class 2 (see notes)	2/1/2026		\$51.61	\$35.00	\$86.61
Painters Class 3 (see notes)	2/1/2025		\$61.81	\$33.95	\$95.76
Painters Class 3 (see notes)	2/1/2026		\$62.57	\$35.04	\$97.61
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2025		\$68.89	\$44.73	\$113.62
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Truckdriver class 1(see notes)	5/1/2024		\$36.64	\$22.54	\$59.18
Truckdriver class 1(see notes)	5/1/2026		\$38.42	\$23.87	\$62.29
Truckdriver class 2 (see notes)	5/1/2024		\$36.74	\$22.54	\$59.28
Truckdriver class 2 (see notes)	5/1/2026		\$38.52	\$23.87	\$62.39
Truckdriver class 3 (see notes)	5/1/2026		\$38.77	\$23.87	\$62.64

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project Name:	Interior/Exterior Renovations and Upgrades at Conestoga High School
General Description:	Replacement of VCT flooring and rubber stair treads at music corridor. Replacement of installed seating and desks in large group room. Window replacement at bus lobby. Paving of main parking lot.
Project Locality	200 Irish Road, Berwyn, PA 193
Awarding Agency:	Tredyffrin Easttown School District
Contract Award Date:	11/23/2026
Serial Number:	26-08396
Project Classification:	Building/Highway
Determination Date:	9/17/2026
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Chester County

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08396 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/1/2025		\$60.84	\$48.71	\$109.55
Asbestos & Insulation Workers	5/1/2026		\$64.51	\$50.26	\$114.77
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$54.59	\$29.02	\$83.61
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$47.47	\$29.02	\$76.49
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$23.74	\$20.62	\$44.36
Carpenters	5/1/2026		\$48.55	\$30.39	\$78.94
Carpenters	5/1/2027		\$50.46	\$30.74	\$81.20
Carpenters	5/1/2028		\$52.43	\$31.09	\$83.52
Carpenters	5/1/2029		\$54.46	\$31.44	\$85.90
Carpenters	5/1/2030		\$56.55	\$31.79	\$88.34
Cement Finishers & Plasterers	5/1/2022		\$38.57	\$32.39	\$70.96
Cement Masons	5/1/2024		\$46.70	\$32.46	\$79.16
Cement Masons	5/1/2025		\$48.70	\$32.46	\$81.16
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Drywall Finisher	5/1/2025		\$40.14	\$32.35	\$72.49
Drywall Finisher	5/1/2026		\$41.10	\$32.99	\$74.09
Electricians	5/1/2025		\$58.63	\$47.28	\$105.91
Electricians	5/1/2026		\$62.41	\$48.50	\$110.91
Electricians	5/1/2027		\$66.53	\$50.63	\$117.16
Electricians	5/1/2028		\$70.83	\$52.83	\$123.66
Elevator Constructor	1/1/2025		\$71.85	\$45.77	\$117.62
Elevator Constructor	1/1/2026		\$74.86	\$46.86	\$121.72
Floor Coverer	5/1/2025		\$51.67	\$31.69	\$83.36
Floor Coverer	5/1/2026		\$52.84	\$32.86	\$85.70
Glazier	5/1/2025		\$49.96	\$38.34	\$88.30
Glazier	5/1/2026		\$51.30	\$39.37	\$90.67
Interior Finish	5/1/2023		\$34.60	\$25.80	\$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2025		\$44.77	\$36.27	\$81.04
Iron Workers (Riggers)	7/1/2026		\$48.84	\$36.52	\$85.36
Iron Workers (Rodman/Reinforcing)	7/1/2024		\$47.70	\$34.77	\$82.47
Iron Workers (Rodman/Reinforcing)	7/1/2025		\$47.80	\$36.65	\$84.45
Iron Workers (Rodman/Reinforcing)	7/1/2026		\$52.39	\$36.90	\$89.29
Laborers (Class 01 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Laborers (Class 02 - See notes)	5/1/2025		\$41.00	\$27.70	\$68.70
Laborers (Class 03 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 04 - See notes)	5/1/2025		\$37.67	\$26.28	\$63.95
Laborers (Class 05 - See notes)	5/1/2025		\$37.25	\$26.10	\$63.35
Landscape Laborer	5/1/2025		\$32.15	\$24.30	\$56.45

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08396 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Marble Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Marble Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Marble Mason	5/1/2023		\$47.20	\$31.95	\$79.15
Marble Setter	5/1/2026		\$51.50	\$33.80	\$85.30
Mason Tender, Cement	5/1/2023		\$35.02	\$25.98	\$61.00
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators (Building, Class 01 - See Notes)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators (Building, Class 01 - See Notes)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators (Building, Class 01A - See Notes)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators (Building, Class 01A - See Notes)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators (Building, Class 02 - See Notes)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators (Building, Class 02 - See Notes)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators (Building, Class 02A - See Notes)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators (Building, Class 02A - See Notes)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators (Building, Class 03 - See Notes)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators (Building, Class 03 - See Notes)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators (Building, Class 04 - See Notes)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators (Building, Class 04 - See Notes)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators (Building, Class 05 - See Notes)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators (Building, Class 05 - See Notes)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators (Building, Class 06 - See Notes)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators (Building, Class 06 - See Notes)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators (Building, Class 07A- See Notes)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators (Building, Class 07A- See Notes)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators (Building, Class 07B- See Notes)	5/1/2025		\$65.97	\$39.46	\$105.43
Operators (Building, Class 07B- See Notes)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters Class 1 (see notes)	5/1/2025		\$44.38	\$34.55	\$78.93
Painters Class 1 (see notes)	5/1/2026		\$45.71	\$35.22	\$80.93
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 4 (see notes)	5/1/2025		\$46.47	\$34.55	\$81.02
Painters Class 4 (see notes)	5/1/2026		\$48.45	\$35.22	\$83.67
Plasterers	5/1/2024		\$39.88	\$33.08	\$72.96
plumber	5/1/2025		\$70.53	\$39.46	\$109.99
plumber	5/1/2026		\$73.73	\$40.36	\$114.09
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Pointers, Caulkers, Cleaners	5/1/2026		\$53.35	\$32.30	\$85.65
Roofers (Composition)	5/1/2025		\$46.03	\$34.77	\$80.80
Roofers (Composition)	5/1/2026		\$47.53	\$35.22	\$82.75
Roofers (Shingle)	5/1/2024		\$34.35	\$22.20	\$56.55
Roofers (Slate & Tile)	5/1/2024		\$37.35	\$22.20	\$59.55
Sheet Metal Workers	5/1/2025		\$62.62	\$52.17	\$114.79
Sheet Metal Workers	5/1/2026		\$65.06	\$54.48	\$119.54

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08396 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sign Makers and Hangars	7/15/2025		\$33.48	\$26.41	\$59.89
Sign Makers and Hangars	7/15/2026		\$36.38	\$25.01	\$61.39
Sprinklerfitters	1/1/2023		\$62.23	\$31.99	\$94.22
Sprinklerfitters	5/1/2025		\$70.37	\$34.85	\$105.22
Steamfitters	5/1/2024		\$70.32	\$43.09	\$113.41
Steamfitters	5/1/2025		\$72.52	\$44.89	\$117.41
Stone Masons	5/1/2025		\$50.00	\$32.80	\$82.80
Stone Masons	5/1/2026		\$51.50	\$33.80	\$85.30
Terrazzo Finisher	5/1/2025		\$45.61	\$29.41	\$75.02
Terrazzo Finisher	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Grinder	5/1/2025		\$45.88	\$29.41	\$75.29
Terrazzo Grinder	5/1/2026		\$47.78	\$29.61	\$77.39
Terrazzo Mechanics	5/1/2025		\$52.21	\$31.26	\$83.47
Terrazzo Mechanics	5/1/2026		\$53.36	\$32.61	\$85.97
Tile Finisher	5/1/2025		\$41.17	\$30.75	\$71.92
Tile Finisher	5/1/2026		\$42.07	\$31.85	\$73.92
Tile Setter	5/1/2025		\$52.21	\$31.26	\$83.47
Tile Setter	5/1/2026		\$53.36	\$32.61	\$85.97
Truckdriver class 1(see notes)	5/1/2024		\$36.79	\$22.54	\$59.33
Truckdriver class 1(see notes)	5/1/2026		\$38.57	\$23.87	\$62.44
Truckdriver class 2 (see notes)	5/1/2024		\$36.89	\$22.54	\$59.43
Truckdriver class 2 (see notes)	5/1/2026		\$38.67	\$23.87	\$62.54
Truckdriver class 3 (see notes)	5/1/2026		\$38.92	\$23.87	\$62.79
Window Film / Tint Installer	6/1/2025		\$27.42	\$15.13	\$42.55

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08396 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayer	5/1/2025		\$50.00	\$32.57	\$82.57
Bricklayer	5/1/2026		\$51.15	\$34.92	\$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$65.96	\$30.09	\$96.05
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		\$67.52	\$30.44	\$97.96
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$58.39	\$29.06	\$87.45
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		\$60.09	\$29.06	\$89.15
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$45.88	\$23.19	\$69.07
Carpenter - Rodman (Surveying & Layout)	5/1/2026		\$46.97	\$23.54	\$70.51
Carpenter	5/1/2025		\$57.36	\$30.09	\$87.45
Carpenter	5/1/2026		\$58.71	\$30.44	\$89.15
Cement Masons	5/1/2023		\$43.20	\$32.91	\$76.11
Cement Masons	5/1/2025		\$46.55	\$32.66	\$79.21
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		\$61.88	\$45.47	\$107.35
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Electric Lineman	6/3/2024		\$62.07	\$33.96	\$96.03
Electric Lineman	6/2/2025		\$65.10	\$34.45	\$99.55
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		\$53.20	\$45.01	\$98.21
Iron Workers (Riggers)	7/1/2023		\$42.53	\$34.14	\$76.67
Iron Workers (Rodman/Reinforcing)	7/1/2023		\$45.70	\$34.77	\$80.47
Laborers (Class 01 - See notes)	5/1/2025		\$40.20	\$27.80	\$68.00
Laborers (Class 01 - See notes)	5/1/2026		\$41.65	\$27.90	\$69.55
Laborers (Class 02 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 02 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 03 - See notes)	5/1/2025		\$40.40	\$27.80	\$68.20
Laborers (Class 03 - See notes)	5/1/2026		\$41.85	\$27.90	\$69.75
Laborers (Class 04 - See notes)	5/1/2025		\$35.00	\$27.80	\$62.80
Laborers (Class 04 - See notes)	5/1/2026		\$36.45	\$27.90	\$64.35
Laborers (Class 05 - See notes)	5/1/2025		\$41.05	\$27.80	\$68.85
Laborers (Class 05 - See notes)	5/1/2026		\$42.50	\$27.90	\$70.40
Laborers (Class 06 - See notes)	5/1/2025		\$41.10	\$27.80	\$68.90
Laborers (Class 06 - See notes)	5/1/2026		\$42.55	\$27.90	\$70.45
Laborers (Class 07 - See notes)	5/1/2025		\$40.95	\$27.80	\$68.75
Laborers (Class 07 - See notes)	5/1/2026		\$42.40	\$27.90	\$70.30
Laborers (Class 08 - See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 08 - See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 09 - See notes)	5/1/2025		\$40.55	\$27.80	\$68.35
Laborers (Class 09 - See notes)	5/1/2026		\$42.00	\$27.90	\$69.90
Laborers (Class 10- See notes)	5/1/2025		\$40.70	\$27.80	\$68.50
Laborers (Class 10- See notes)	5/1/2026		\$42.15	\$27.90	\$70.05
Laborers (Class 11 -See Notes)	5/1/2025		\$40.60	\$27.80	\$68.40
Laborers (Class 11 -See Notes)	5/1/2026		\$42.05	\$27.90	\$69.95
Laborers (Class 12 -See Notes)	5/1/2025		\$42.30	\$27.80	\$70.10
Laborers (Class 12 -See Notes)	5/1/2026		\$42.85	\$27.90	\$70.75

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 26-08396 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 13 -See Notes)	5/1/2025		\$44.33	\$27.80	\$72.13
Laborers (Class 13 -See Notes)	5/1/2026		\$45.78	\$27.90	\$73.68
Laborers (Class 14 -See Notes)	5/1/2025		\$40.90	\$27.80	\$68.70
Laborers (Class 14 -See Notes)	5/1/2026		\$41.90	\$27.90	\$69.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2025		\$34.07	\$19.73	\$53.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2026		\$35.52	\$19.83	\$55.35
Laborers Utility (PGW ONLY)	5/1/2024		\$39.70	\$19.63	\$59.33
Laborers Utility (PGW ONLY)	5/1/2025		\$41.10	\$19.73	\$60.83
Laborers Utility (PGW ONLY)	5/1/2026		\$42.55	\$19.83	\$62.38
Landscape Laborer	5/1/2024		\$30.28	\$24.05	\$54.33
Landscape Laborer	5/1/2025		\$31.73	\$24.15	\$55.88
Millwright	5/1/2025		\$57.39	\$35.81	\$93.20
Millwright	5/1/2026		\$60.20	\$35.81	\$96.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.52	\$34.49	\$89.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.67	\$35.34	\$91.01
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.52	\$35.38	\$92.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.68	\$36.22	\$94.90
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2025		\$54.27	\$34.42	\$88.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2026		\$55.43	\$35.26	\$90.69
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2025		\$57.29	\$35.29	\$92.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2026		\$58.44	\$36.14	\$94.58
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2025		\$50.18	\$33.22	\$83.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.34	\$34.06	\$85.40
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		\$49.88	\$33.13	\$83.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2026		\$51.04	\$33.97	\$85.01
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2025		\$48.16	\$32.62	\$80.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2026		\$49.32	\$33.46	\$82.78
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2025		\$47.17	\$32.33	\$79.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2026		\$48.34	\$33.16	\$81.50
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2025		\$66.26	\$39.55	\$105.81
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.73	\$40.48	\$108.21
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		\$65.97	\$39.46	\$105.43

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 26-08396 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters - Line Stripping	12/1/2025		\$45.12	\$29.41	\$74.53
Painters Class 2 (see notes)	2/1/2025		\$50.85	\$33.91	\$84.76
Painters Class 2 (see notes)	2/1/2026		\$51.61	\$35.00	\$86.61
Painters Class 3 (see notes)	2/1/2025		\$61.81	\$33.95	\$95.76
Painters Class 3 (see notes)	2/1/2026		\$62.57	\$35.04	\$97.61
Pointers, Caulkers, Cleaners	5/1/2025		\$51.35	\$31.80	\$83.15
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2025		\$68.89	\$44.73	\$113.62
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Truckdriver class 1(see notes)	5/1/2024		\$36.64	\$22.54	\$59.18
Truckdriver class 1(see notes)	5/1/2026		\$38.42	\$23.87	\$62.29
Truckdriver class 2 (see notes)	5/1/2024		\$36.74	\$22.54	\$59.28
Truckdriver class 2 (see notes)	5/1/2026		\$38.52	\$23.87	\$62.39
Truckdriver class 3 (see notes)	5/1/2026		\$38.77	\$23.87	\$62.64



AIA Document A201

General Conditions of the Contract for Construction

*THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION
WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS MODIFICATION*

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter 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 Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of addenda relating to bidding requirements).

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 Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor or (3) between any persons or entities other than the Owner and 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 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 or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, 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, equip-

ment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.2.3 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 intended results.

1.2.4 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.

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

1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

1.3.1 The Drawings, Specifications and other documents prepared by the Architect are instruments of the Architect's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect, and unless otherwise indicated the Architect shall be deemed the author of them and will retain all common law, statutory and other reserved rights, in addition to the copyright. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the

Work without the specific written consent of the Owner and Architect. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's copyright or other reserved rights.

1.4 CAPITALIZATION

1.4.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.5 INTERPRETATION

1.5.1 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.

ARTICLE 2

OWNER

2.1 DEFINITION

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 term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 The Owner upon reasonable written request shall furnish to the Contractor in writing information which is 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 at the time of execution of the Agreement and, within five days after any change, information of such change in title, recorded or unrecorded.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall, at the request of the Contractor, prior to execution of the Agreement and promptly from time to time thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. *[Note: Unless such reasonable evidence were furnished on request prior to the execution of the Agreement, the prospective contractor would not be required to execute the Agreement or to commence the Work.]*

2.2.2 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

2.2.3 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assess-

ments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.2.6 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Article 6 (Construction by Owner or by Separate Contractors), Article 9 (Payments and Completion) and Article 11 (Insurance and Bonds).

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner, by written order signed personally or by an agent specifically so empowered by the Owner in writing, may order 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 the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-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 after such seven-day period give the Contractor a second written notice to correct such deficiencies within a second seven-day period. If the Contractor within such second seven-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3

CONTRACTOR

3.1 DEFINITION

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 term "Contractor" means the Contractor or the Contractor's authorized representative.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.2 and shall at once report to the Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency or omission and knowingly failed to report it to the Architect. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

3.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Architect at once.

3.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 3.12.

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, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

3.3.3 The Contractor shall not be relieved of 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 other than the Contractor.

3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

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.

3.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

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 otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.7 PERMITS, FEES AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

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

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

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, but the Contractor shall not be required to employ persons or entities against which the Contractor makes reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

- 1** materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work;
- 2** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

- .3 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 and not in the allowances;
- .4 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 costs and the allowances under Clause 3.8.2.2 and (2) changes in Contractor's costs under Clause 3.8.2.3.

3.9 SUPERINTENDENT

3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

3.10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

3.10.3 The Contractor shall conform to the most recent schedules.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

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 which 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. The purpose of their submittal is to demonstrate for those portions of the Work for

which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7.

3.12.5 The Contractor shall review, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.12.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

3.12.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

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.

3.12.10 Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents.

3.12.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

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 such construction by the

Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

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

3.17 ROYALTIES AND PATENTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, 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, 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) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, 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 which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 3.18 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 under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

3.18.3 The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the Architect, the Archi-

tect's consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, the Architect's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

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.

4.1.3 In case of termination of employment of the Architect, the Owner shall appoint an architect against whom the Contractor makes no reasonable objection and whose status under the Contract Documents shall be that of the former architect.

4.1.4 Disputes arising under Subparagraphs 4.1.2 and 4.1.3 shall be subject to arbitration.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the correction period described in Paragraph 12.2. The Architect will advise and consult with the Owner. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.

4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, 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 quality or quantity of the Work. On the basis of on-site observations as an architect, the Architect will keep the Owner informed of progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

4.2.3 The Architect will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.3. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Con-

tractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.5 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.2.6 The Architect will have authority to reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable for implementation of the intent of the Contract Documents, the Architect will have authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect 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 to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, 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 such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, 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, 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 Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will 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, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

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 duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.11 The Architect will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 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 decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so 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.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be made by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Decision of Architect. Claims, including those alleging an error or omission by the Architect, shall be referred initially to the Architect for action as provided in Paragraph 4.4. A decision by the Architect, as provided in Subparagraph 4.4.4, shall be required as a condition precedent to arbitration or litigation of a Claim between the Contractor and Owner as to all such matters arising prior to the date final payment is due, regardless of (1) whether such matters relate to execution and progress of the Work or (2) the extent to which the Work has been completed. The decision by the Architect in response to a Claim shall not be a condition precedent to arbitration or litigation in the event (1) the position of Architect is vacant, (2) the Architect has not received evidence or has failed to render a decision within agreed time limits, (3) the Architect has failed to take action required under Subparagraph 4.4.4 within 30 days after the Claim is made, (4) 45 days have passed after the Claim has been referred to the Architect or (5) the Claim relates to a mechanic's lien.

4.3.3 Time Limits on Claims. Claims by either party must be made 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. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

4.3.4 Continuing Contract Performance. Pending final resolution of a Claim including arbitration, unless otherwise agreed in writing the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.5 Waiver of Claims: Final Payment. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

- .1 liens, 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; or
- .3 terms of special warranties required by the Contract Documents.

4.3.6 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which 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, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if 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 an equitable adjustment in the Contract Sum or Contract Time, or both. 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 so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.7 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. 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, Claim shall be filed in accordance with the procedure established herein.

4.3.8 Claims for Additional Time

4.3.8.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.8.2 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 and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction.

4.3.9 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.3.7 or 4.3.8.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 The Architect will review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Architect expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.4.2 If a Claim has been resolved, the Architect will prepare or obtain appropriate documentation.

4.4.3 If a Claim has not been resolved, the party making the Claim shall, within ten days after the Architect's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Architect, (2) modify the initial Claim or (3) notify the Architect that the initial Claim stands.

4.4.4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect's decision will be made within seven days, which decision shall be final and binding on the parties but subject to arbitration. Upon expiration of such time period, the Architect will render to the parties the Architect's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. If there is a surety and there appears to be a possibility of a Contractor's default, the Architect may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.5 ARBITRATION

4.5.1 Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect and except those waived as provided for in Subparagraph 4.3.5. Such controversies or Claims upon which the Architect has given notice and rendered a decision as provided in Subparagraph 4.4.4 shall be subject to arbitration upon written demand of either party. Arbitration may be commenced when 45 days have passed after a Claim has been referred to the Architect as provided in Paragraph 4.3 and no decision has been rendered.

4.5.2 Rules and Notices for Arbitration. Claims between the Owner and Contractor not resolved under Paragraph 4.4 shall, if subject to arbitration under Subparagraph 4.5.1, be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect, unless the parties mutually agree otherwise. Notice of demand for arbitration shall be filed in writing with the other party to the Agreement between the Owner and Contractor and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.5.3 Contract Performance During Arbitration. During arbitration proceedings, the Owner and Contractor shall comply with Subparagraph 4.3.4.

4.5.4 When Arbitration May Be Demanded. Demand for arbitration of any Claim may not be made until the earlier of (1) the date on which the Architect has rendered a final written decision on the Claim, (2) the tenth day after the parties have presented evidence to the Architect or have been given reasonable opportunity to do so, if the Architect has not rendered a final written decision by that date, or (3) any of the five events described in Subparagraph 4.3.2.

4.5.4.1 When a written decision of the Architect states that (1) the decision is final but subject to arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

4.5.4.2 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.5.1 and 4.5.4 and Clause 4.5.4.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.5.5 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity not named or described therein. 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.

4.5.6 Claims and Timely Assertion of Claims. A party who files 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. When a party fails to include a Claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

4.5.7 Judgment on Final Award. 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.

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. 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 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. 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.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

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.

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued. However, no increase in the Contract Sum shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such change.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, 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 which the Contractor, by these 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 which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

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 Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and
- .2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 If the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted.

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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided elsewhere in the Contract Documents.

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 other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum deemed necessary after a joint review and mutual agreement. 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, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor 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.

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 report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Paragraph 4.3 provided the separate contractor has reciprocal obligations.

6.2.6 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 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 as described in Paragraph 3.15, the Owner may clean up and allocate the cost among those responsible as the Architect determines to be just.

ARTICLE 7

CHANGES IN THE WORK

7.1 CHANGES

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, 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 alone.

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

7.1.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

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 a change in the Work;
- .2 the amount of the adjustment in the Contract Sum, if any; and
- .3 the extent of the adjustment in the Contract Time, if any.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

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 and stating a proposed basis for 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.

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:

- .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 and a mutually acceptable fixed or percentage fee; or

.4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including 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.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect 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, a reasonable allowance for overhead and profit. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, 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 Subparagraph 7.3.6 shall be limited to the following:

- .1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' or workmen's compensation insurance;
- .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 related to the Work; and
- .5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. 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.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Architect for determination.

7.3.9 When the Owner and Contractor agree with the 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 shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK

7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

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. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 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, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

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

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

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

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.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents.

9.3.1.1 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, 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 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, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the

Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 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 observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. 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 material 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 decide not to certify payment and 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 Subparagraph 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 Subparagraph 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 Architect may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss because of:

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims;
- .3 failure of the Contractor to make payments properly to Subcontractors or 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 another 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 persistent failure to carry out the Work in accordance with the Contract Documents.

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

9.6 PROGRESS PAYMENTS

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such 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 similar manner.

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 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 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.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's 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 arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

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 is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

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 Architect a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. 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. Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or design-

nated 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 in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall 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. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.8.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may 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 as required under Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Work. 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. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Subparagraph 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 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make

such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and 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 will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to 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, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, 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. 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. If such lien 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 such lien, including all costs and reasonable attorneys' fees.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, 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 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 surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor 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. The making of final payment shall constitute a waiver of claims by the Owner as provided in Subparagraph 4.3.5.

9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material 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. Such waivers shall be in addition to the waiver described in Subparagraph 4.3.5.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which arbitration has not been demanded, or by arbitration under Article 4.

10.1.3 The Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

10.1.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Architect, 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, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) 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) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable, 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 which would otherwise exist as to a party or person described in this Subparagraph 10.1.4.

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 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 or the Contractor's Subcontractors or Sub-subcontractors; and
- .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 give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall 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 owners and users of adjacent sites and utilities.

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, 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 Clauses 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 Clauses 10.2.1.2 and 10.2.1.3, except damage or loss 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 Paragraph 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 endanger its safety.

10.3 EMERGENCIES

10.3.1 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 Paragraph 4.3 and Article 7.

ARTICLE 11

INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by 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' or workmen's compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

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 which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;
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 damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
7. claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. Optionally, the Owner may purchase and maintain other insurance for self-protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity

other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

11.3.1.1 Property insurance shall be on an all-risk policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, false-work, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's services and expenses required as a result of such insured loss. Coverage for other perils shall not be required unless otherwise provided in the Contract Documents.

11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

11.3.1.3 If the property insurance requires minimum deductibles and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles above the amounts so identified or if the Owner elects to purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles. If deductibles are not identified in the Contract Documents, the Owner shall pay costs not covered because of deductibles.

11.3.1.4 Unless otherwise provided in the Contract Documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

11.3.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.3.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining 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, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.3.7 for damages caused by fire or other perils covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Contractor.

11.3.7 Waivers of Subrogation. 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, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Paragraph 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as 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.

11.3.8 A loss insured under Owner's property insurance 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 Subparagraph 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.5. If after such loss no other special agreement is made, replacement of damaged property shall be covered by appropriate Change Order.

11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection be made, arbitrators shall be chosen as provided in Paragraph 4.5. The Owner as fiduciary shall, in that case, make settlement with insurers in accordance with directions of such arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.3.11 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.4.2 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.

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 request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's observation and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to observe prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby.

12.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date

for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year 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 performance of the Work. This obligation under this Subparagraph 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

12.2.3 The Contractor shall remove from the site portions of the Work which 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 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Paragraph 2.4. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Subparagraph 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.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which 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. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

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. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 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.

13.4.2 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 in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to 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 timely notice of when and where tests and inspections are to be made so the Architect may observe such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, 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 Architect of when and where tests and inspections are to be made so the Architect may observe such procedures.

The Owner shall bear such costs except as provided in Subparagraph 13.5.3.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses.

13.5.4 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 Architect.

13.5.5 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.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may 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.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

- .1 Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;
- .2 Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and
- .3 After Final Certificate for Payment.** As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

- .1** issuance of an order of a court or other public authority having jurisdiction;
- .2** an act of government, such as a declaration of national emergency, making material unavailable;
- .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 Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents;
- .4** if repeated suspensions, delays or interruptions by the Owner as described in Paragraph 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; or
- .5** the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 If one of the above reasons exists, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.3 If the Work is stopped for a period of 60 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently 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, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.2.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

- .1** persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2** fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3** persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
- .4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to jus-

tify such action, 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' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 accept assignment of subcontracts pursuant to Paragraph 5.4; and
- .3 finish the Work by whatever reasonable method the Owner may deem expedient.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 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, such excess shall be paid to the Contractor. If such costs 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 Architect, upon application, and this obligation for payment shall survive termination of the Contract.

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 An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance, caused by suspension, delay or interruption. 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 this Contract.

14.3.3 Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

**Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS,
& CHS for the Tredyffrin/Easttown School District**

**TREDYFFRIN / EASTTOWN SCHOOL DISTRICT
SUPPLEMENTARY GENERAL CONDITIONS
FOR THE CONTRACT FOR CONSTRUCTION**

THE AMERICAN INSTITUTE OF ARCHITECTS Standard Form A-201, 1987 Edition, of the General Conditions of the Contract for Construction, Articles 1 through 14, pages 1 through 24 inclusive, are included as part of the specifications and will be binding upon all contractors, subcontractors and sub-subcontractors. However, said General Conditions are amended or modified as set forth in these Supplementary General Conditions. Where any section of the standard form is not specifically amended, deleted or supplemented hereby, it shall remain in effect as originally written. In the case of any conflict between the provisions of these Supplementary General Conditions and the General Conditions, the provisions of these Supplementary Conditions shall prevail.

ARTICLE 1 - GENERAL CONDITIONS

Section 1.1.1 is amended by deletion of the first sentence thereof and by substitution of the following therefor:

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the "Agreement"), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, all Specifications including the General Requirements, Notice to Bidders, Instructions to Bidders, Bond forms, other documents listed in the Agreement and Modifications issued after execution of the Contract.

Section 1.1.2 is amended by deletion of the last sentence thereof and by substitution of the following therefor:

The Architect shall, however, be entitled to performance and enforcement of those obligations of the Contractor under the Contract intended to facilitate performance of the Architect's duties.

Section 1.2.1 is deleted in its entirety and the following is substituted therefore:

The Contract Documents shall be signed in not less than triplicate by the Owner and Contractor. If the Owner and/or the Contractor do not sign the Conditions of the Contract, Drawings, Specifications or any other Contract Document, the Architect shall identify such document for the Owner.

Section 1.2.6 is added as follows:

The Specifications determine the standards of quality and the types and methods of workmanship; the Drawings establish the quantities, dimensions and details, the Drawings and Schedule give the location of materials.

Any discrepancies among, or omission in, the Contract Documents shall be called to the Architect's attention by the Contractor before proceeding with the Work affected thereby. In case of discrepancy among the Contract Documents regarding quantity or quality or both, the better quality and the greater quantity (as determined by the Architect) shall be included in the bid and the Contract and, unless otherwise directed in writing by the Architect, shall be performed or furnished.

Any conflict in the Drawings or Specifications as to which of the separate contractors is to perform specific Work, shall be resolved by the Architect, whose decision shall be final and binding.

ARTICLE 2 - OWNER

Sections 2.1.2 and 2.2.1 are deleted in their entireties.

Section 2.2.3 is deleted in its entirety and the following is substituted therefor:

The Owner shall secure and pay for any and all necessary land development approvals, zoning approvals, easements and assessments required for construction.

Section 2.2.5 is deleted in its entirety and the following is substituted therefor:

General Contractors will be furnished with four copies of Drawings and Project Manuals, free of charge.

Section 2.4.1 is deleted in its entirety and the following is substituted therefor:

If the Contractor fails within seven (7) days after written notice from Owner to correct defective or non-conforming Work or to remove and replace rejected Work as required by the Architect or Owner, or if the Contractor fails to perform Work in accordance with the Contract Documents (including any requirements of the Progress Schedule), the Owner may correct, remedy or complete such deficiency.

To the extent necessary to complete corrective and remedial action, the Owner may exclude the Contractor from all or part of the Work, and suspend the Contractor's services related thereto, take possession of the Contractor's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and machinery and equipment stored at the site as may be necessary to enable the Owner to exercise its rights under this Section. All direct and indirect costs of the Owner exercising such rights shall be charged against the Contractor in an amount verified by the Architect and a Change Order shall be issued incorporating (a) the necessary revisions in the Contract Documents and (b) a reduction in the Contract sum. Such direct and indirect costs shall include, in particular, but without limitation, compensation for additional services required and all costs of repair and replacement of Work of others destroyed or damaged by correction, removal or replacement of the Contractor's defective Work. The Contractor shall not be allowed any extension of the Contract Time because of any delay in performance of the Work attributable to exercise by the Owner of its rights hereunder.

ARTICLE 3 - CONTRACTOR

Section 3.1.1 is amended by addition of the following at the end thereof:

The term "Contractor" shall include the General Contractor, Mechanical Contractor, Plumbing Contractor and Electrical Contractor entering into a contract with the Owner.

Section 3.3.5 is added as follows:

The Contractor covenants with the Owner to furnish its best skill and judgment and to cooperate with the Architect and Owner in furthering the interests of the Owner. The Contractor agrees to furnish efficient business administration and Superintendents and to use its best effort to furnish at all times an adequate supply of workers and materials and to perform the Work in the most efficient and expeditious manner consistent with the interests of the Owner.

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Section 3.5.1 is deleted in its entirety and the following is substituted therefor:

The Contractor warrants to the Owner and Architect that materials and equipment furnished under this Contract will be new unless otherwise specified, and all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. Contractor further warrants that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective. If requested by the Owner or Architect, the Contractor shall furnish satisfactory evidence as to the kind and/or quality of materials and equipment. The Contractor shall collect and deliver to the Architect or Owner all written warranties given to Owner by others for the Project Work.

Section 3.6.1 is deleted in its entirety and the following is substituted therefor:

The Contractor and all subcontractors and sub-subcontractors must comply with all laws governing the payment of sales tax, consumer, use and similar taxes related to the Work.

The Contractor shall check all materials, equipment and labor entering into the Work. In form and system satisfactory to the Owner, the Contractor shall keep such full and details accounts as may be necessary for proper financial management under this Contract. The Owner or its representative shall be afforded access to all the Contractor's records, books correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to this Contract. The Contractor shall preserve all such records for a period of three (3) years or for such longer period as may be required by law, after final payment.

The Contractor agrees to assign and transfer to the Owner all of its rights to sales and use tax which may be refunded as a result of a claim for a refund for materials purchased in connection with this Contract. The Contractor further agrees that it will not file a claim for refund of any sales or use tax which is the subject of this assignment.

The Contractor agrees to include the provisions of this Section 3.6.1, in full, in any contracts with subcontractors and to require that subcontractors include same in contracts with sub-subcontractors.

Section 3.7.1 is deleted in its entirety and the following is substituted therefor:

Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for building permits and for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work. It shall be the Owner's responsibility to reimburse the Contractor for a local "building" permit, which will be obtained from and required by Tredyffrin Township. In addition, the Contractor shall pay for and secure necessary Use and Occupancy permits prior to requesting issuance of a Certificate of Substantial Completion. Further, the Contractor shall pay all charges of utility service companies for connection to the Work. The Owner shall pay charges of companies for capital costs related to such utilities, including, for example, a sewer tapping fee.

Section 3.7.3 is deleted in its entirety and the following is substituted therefor:

If the Contractor observes that portions of the Contract Documents or the Work are at variance with current laws, ordinances, rules, regulations, permits or other lawful orders of public authorities, the Contractor shall promptly notify the Architect and Owner in writing so that necessary changes may be accomplished by appropriate modification.

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Section 3.7.5 is added as follows:

The Contractor shall comply with all applicable federal and state laws, local ordinances, statutes, building codes, highway regulations, and with all regulations and requirements of the Department of Education, Bureau of Labor and Industry and Department of Transportation of the Commonwealth of Pennsylvania. As set forth in Article 13, the Contractor shall comply with all provisions of the Prevailing Wage Act. A schedule of prevailing wage rates is included with the specifications.

Section 3.8, including subsections 3.8.1 and 3.8.2, is deleted in its entirety.

Section 3.9.2 is added as follows:

Prior to execution of the Contractor-Owner Agreement, the Contractor shall submit to the Architect, and the Owner an updated résumé and other supporting documentation of experience and competency for the proposed superintendent on the Project. Should the Owner or the Architect find the proposed superintendent unacceptable for any reason, the Contractor shall submit additional names and résumés for consideration by the Owner and Architect. Once hired, the Contractor shall not replace its superintendent without prior notice to the Owner. The requirements contained in this Section shall apply to any proposed replacement superintendent regardless of whether the proposed tenure of the superintendent is temporary or permanent.

Section 3.13.1 is deleted in its entirety and the following is substituted therefor:

The Contractor shall confine operations at the site to times and areas permitted by the Owner, law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

Section 3.15.3 is added as follows:

As the buildings and site will be occupied during a part of the construction, the Contractor will be responsible on an ongoing basis to keep construction dirt from finding its way into or infiltrating any occupied areas. This responsibility shall apply to inside areas, outside paving and play areas and lawns. The Contractor shall also be responsible for cleaning construction dirt and mud from internal roadways, parking lots and adjacent roads. At the end of each work day during the course of construction, the Contractor shall clean and remove all dirt, dust and debris from the site. Dust shall be kept to a minimum at all times. It is the responsibility of the contractor to provide any equipment necessary for dust control. In addition to removal of dirt, dust and debris on a daily basis, at the completion of the Project and prior to request for final payment, the following additional clean up shall be completed:

- A. Removal of all stains, marks, fingerprints, mortar or paint spots and other defacements from all finished Work both exterior and interior including, but not limited to, finishing hardware, tilework, cabinet work, glass, etc.;
- B. clean all fixtures and equipment.
- C. and vacuum and/or wash all finish floors.

Section 3.18.1 is deleted in its entirety and the following is substituted therefor:

The Contractor agrees to protect, defend, indemnify and hold the Owner (Tredyffrin/Easttown School District) and its agents and agencies, the Architect, the Engineer, and any other party specifically named by the Owner, free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees or other expenses or liabilities of every kind and character arising out of or

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relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes action of every kind and character in connection with or arising directly or indirectly out of the Contract and/or the performance thereof. Without limiting the generality of the foregoing, any and all such claims, etc., relating to personal injury, death, damage to property, defects in materials or workmanship, actual or alleged infringement of any patent, trademark, copyright (or application for any other tangible or intangible personal or property right), or any actual or alleged violation of any applicable statute, ordinance, administrative order, rule or regulation, or degree of any court, shall be included in the indemnity hereunder. The Contractor further agrees to investigate, handle, respond to, provide defense for and defend any such claims, etc., at its sole expense and agrees to bear all other costs and expenses related thereto, even if it (claims, etc.), is groundless, false or fraudulent. This indemnification shall apply to the acts or omissions of the Contractor, any subcontractor, or any one directly or indirectly employed by any of them or any one for whose acts any of them may be liable, regardless of whether or not caused in part by a party indemnified hereunder. In the event such indemnification violates any law, the foregoing provisions shall not be construed to indemnify the Owner and its agents and agencies and the Architect and the Engineer for liability arising out of bodily injury to persons or damage to property caused by or resulting from the sole negligence of those parties.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

Section 4.1.3 is deleted in its entirety and the following is substituted therefor:

In case of termination of employment of the Architect, the Owner shall appoint an Architect whose status under the Contract Documents shall be that of the former Architect.

Section 4.1.4 is deleted in its entirety.

Section 4.2.5 is amended by addition of the following at the end thereof:

Except for requests for payment for changes in the Work which require approval of Board of School Directors, the Architect shall have seven (7) days to review Contractor's payment requests and payment shall be made thirty-two (32) days from the Architect's receipt of the request where the Owner and Architect approve of same. No request for payment will be approved unless accompanied by verified statements certifying payment of prevailing wages under the Prevailing Wage Act for all Work for which payment request is made.

Section 4.2.6 is amended by addition of the following at the end thereof:

In addition to the Architect, the Owner will have authority to reject work which does not conform to the Contract Documents. The Architect and the Owner shall at all times have access to the Work wherever it is preparation and/or progress. The Contractor shall provide facilities for such access.

Section 4.2.11 is deleted in its entirety and the following is substituted therefor:

The Architect will interpret matters concerning performance and requirements of the Contract Documents upon written request of either the Owner or the Contractor. Architect's response to such requests will be made with reasonable promptness as agreed upon but in no event later than fifteen (15) days after the Architect's receipt of the written request. The Owner shall decide matters concerning performance under and requirements of the Contract Documents. The decisions of the Owner shall be consistent with the intent of or reasonably inferable from the Contract Documents and decisions will be issued in writing or in the form of drawings.

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Section 4.5, including subsections 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.4.1, 4.5.4.2, 4.5.5, 4.5.6 and 4.5.7, is deleted in its entirety. A new **Section 4.5** is added as follows:

Any controversy or claim arising out of or related to the Contract or breach thereof that is not resolved pursuant to the provisions of Section 4.4 may be brought in a civil action by the Owner or Contractor in the Court of Common Pleas of Chester County. The Owner may at its sole discretion elect to submit its claim to non-binding mediation and/or binding arbitration. However, prior to the Contractor commencing an action in the Court of Common Pleas of Chester County, the Contractor is required to submit written notice to the Owner of its intent to commence an action upon the Owner, and the Owner, at its sole discretion, may demand that the matter be submitted to mediation and/or arbitration. If the Owner elects that any claim be submitted to arbitration, the arbitration shall be in accordance with the construction industry arbitration rules of the American Arbitration Association. During the Court of Common Pleas proceedings, mediation proceedings and/or arbitration proceedings, the Owner and Contractor shall comply with sub paragraph 4.3.4.

ARTICLE 5 - SUBCONTRACTORS

Section 5.3.2 is added as follows:

The Owner shall have the right, but not the obligation, to pay subcontractors directly if the Architect advises the Owner that, in his opinion, failure of the Contractor to pay the subcontractor in question would be detrimental to the progress of the Work. In such cases, the Owner may withhold from the prime Contractor, money believed to be due the subcontractor and to pay the subcontractor directly. The Owner or the Architect may furnish to any subcontractor or sub-subcontractor or any other person or organization, evidence of amounts paid to the Contractor on account of the specific Work done by the subcontractor or sub-subcontractor.

ARTICLE 6 - WORK BY OWNER OR BY SEPARATE CONTRACTORS

Section 6.1.1 is deleted in its entirety and the following is substituted therefor:

The Owner reserves the right to perform work related to the Project with its own forces, and to award separate contracts in connection with other portions of the Project or other work on the site under these or similar conditions of the Contract. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, he shall make such claim as provided elsewhere in the Contract Documents.

Section 6.1.3 is deleted in its entirety and the following is substituted therefor:

The Contractor shall be responsible for coordinating all work activities on the project and prepare construction schedules, including revisions thereto, when appropriate, for the efficient coordination of the work. The resulting construction schedules shall be used by the Contractor and the Owner until subsequently revised.

Section 6.1.4 is deleted in its entirety.

Section 6.2.4 is amended by addition of the following at the end thereof:

Any losses, damages, costs, charges or expenses caused by defective or ill-timed Work shall be borne by the Contractor, who shall be responsible to the Owner therefor.

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Section 6.2.7 is added as follows:

Should the Contractor cause damage to the Work or property of any subcontractor or should any claim arising out of the Contractor's performance of Work at the site be made by any separate contractor against the Contractor, the Owner or any other person, the Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute. The Contractor shall, to the fullest extent permitted by law, indemnify and hold the Owner and the Architect harmless from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, court and arbitration costs, arising out of any action, legal or equitable, brought by any separate contractor on a claim arising out of the Contractor's Work at the site. Should a separate contractor cause damage to Work or property of the Contractor, or should the Work of any separate contractor at the site give rise to any other claim, the Contractor covenants and agrees that it will not institute any action against the Owner or the Architect to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from the Owner or the Architect on account of any such damage or claim. If the Contractor is delayed at any time with the progress of the Work by any act or neglect of a separate contractor, the Contractor shall make a request to the Architect and Owner for an extension of time within fifteen (15) days of occurrence of the act or neglect of such separate contractor giving rise to the delay. Notwithstanding anything in the General Conditions to the contrary, no extension of time shall be granted if the Contractor fails to notify the owner and the Architect of any such delay within the said fifteen (15) day period. An extension of the Contract time shall be the Contractor's exclusive remedy with respect to the Owner for any delay caused by a separate contractor.

ARTICLE 7 - CHANGES IN THE WORK

Section 7.1.2.1 and 7.1.2.2 are added as follows:

7.1.2.1 The process for a Change Order shall be as follows:

- .1 If the Contractor believes a Change Order may be necessary the issue should first be discussed with the Architect or respective Engineer.
- .2 If it is deemed necessary then a complete and clear written description of the work, along with detailed cost breakdown, shall be submitted to the Architect for review.
- .3 Following review, and approval by the Owner, the Contractor will be directed to start work. No work should take place without the Owner's approval.

7.1.2.2 When no unit prices are included and when the actual cost of the Work forms the basis for the amount to be paid to the Contractor, the Contractor shall add overhead and profit according to the following:

- .1 No more than fifteen percent (15%) shall be added to the cost of the Work if it is work done by the Contractor. Supervision, labor, material and equipment define the cost of the Work. Said fifteen percent (15%) shall be all-inclusive and no additional charges for items such as insurance or bonds will be approved.
- .2 No more than Eight percent (8%) shall be added to the cost of the Work done by subcontractors or sublet. Said eight percent (8%) shall be all-inclusive and no additional charges for items such as insurance or bonds will be approved.
- .3 A subcontractor may add no more than ten percent (10%) to the cost of the work. Supervision, labor, material and equipment define the cost of the Work. Said ten percent (10%) shall be all-inclusive and no additional charges will be approved.

Section 7.3.3.2 is deleted in its entirety and the following is substituted therefor:

Unit prices are set forth in the Contract Documents or subsequently agreed upon. Fifteen percent (15%) to cover overhead, coordination and profit shall be added to changes which increase the scope of the work.

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Costs associated with overhead, coordination and profit will not be included on changes which decrease the scope of the work. Under no conditions shall additional charges such as insurance or bond be approved.

Section 7.3.3.3 is deleted in its entirety and the following is substituted therefor:

When no unit prices are included and when the actual cost of the Work forms the basis for the amount to be paid to the Contractor, the Contractor shall add overhead and profit according to the following:

- (a) No more than fifteen percent (15%) shall be added to the cost of the Work if it is work done by the Contractor. Supervision, labor, material and equipment define the cost of the Work. Said fifteen percent (15%) shall be all-inclusive and no additional charges for items such as insurance or bonds will be approved.
- (b) No more than Eight percent (8%) shall be added to the cost of the Work done by subcontractors or sublet. Said eight percent (8%) shall be all-inclusive and no additional charges for items such as insurance or bonds will be approved.
- (c) A subcontractor may add no more than ten percent (10%) to the cost of the work. Supervision, labor, material and equipment define the cost of the Work. Said ten percent (10%) shall be all-inclusive and no additional charges will be approved.

Section 7.3.7 is amended by deletion of the last sentence thereof and substitution of the following therefor:

Any change in the Contract Sum resulting from such claim shall be authorized by Change Order and calculated as set forth in Section 7.3.3.

Section 7.5.1 is added as follows:

If notice to any surety of any change effecting the general scope of the Work or change in the Contract Sum is required by the provisions of any bonds, it will be the Contractor's responsibility to so notify the surety, and the amount of each applicable fund shall be adjusted accordingly. The Contractor shall furnish proof of such adjustment to the Owner.

ARTICLE 8 - TIME

Section 8.3.1 is deleted in its entirety and the following is substituted therefor:

Except as otherwise provided in Section 8.3.3, if the Contractor is delayed in progress of the Work by an act or neglect of the Owner, the Architect or any other contractor, or by causes beyond Contractor's control and without Contractor's fault or negligence, or by cessation of Work which shall be authorized by the Owner or the Architect or by any other cause which the Owner shall determine to be proper, then the time of completion determined as provided may be extended by the Owner for such reasonable time as the Owner, with advice from the Architect, shall determine to be equitable and just.

Section 8.3.3 is deleted in its entirety and the following is substituted therefor:

No extension of time shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contractor, whether occurring within the time originally scheduled for completion, or within the period within any extension granted. Any additional cost of operations or conditions shall be the responsibility of the Contractor. The Contractor hereby agrees that it shall have no claim for damages of any kind on account of any delay in the commencement of the Work, and/or any delay or suspension of any portion of the Work, whether such

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delay is caused by the Owner, the Architect or otherwise. The Contractor acknowledges that its sole remedy for any such delay and/or suspension will be an extension of time as provided herein.

Section 8.3.4 is added as follows:

No extension of time for completion shall be granted unless a claim or request therefor shall be made, in writing, to the Owner or the Architect by the Contractor within seven (7) days of the occurrence or act which the Contractor believes entitles it to an extension of time of completion; provided, however, if the occurrence or act shall constitute a continuing case of delay, only one claim or request by the Contractor shall be necessary. Failure of the Contractor to make a claim or request for an extension within the seven (7) day period shall constitute a waiver and relinquishment of the right of the Contractor to make a claim or request for an extension of time of completion based upon such act or occurrence, at any time in the future.

Section 8.3.5 is added as follows:

No extension of time of completion will be granted by the Owner if the act or occurrence constituting the basis of the request or claim therefor by the Contractor shall be the non-delivery of materials due to any act or neglect of the Contractor, or the breakdown of equipment in use or intended to be used by the Contractor, or the failure of the Contractor to order, employ, furnish or obtain as necessary for the timely prosecution of the Work, sufficient labor, material, equipment or other matters which shall be within the control of the Contractor. The Contractor shall be solely responsible to the Owner for delays resulted from the causes set forth herein or for the Contractor's failure to make timely claim as set forth in Section 8.3.4.

Section 8.3.6 is added as follows:

No extension of time of completion which shall be granted by the Owner shall be or shall be deemed to be a waiver by the Owner of any rights accruing to it under the Contract Documents and no extension of the time of completion which shall be granted by the Owner shall relieve the Contractor from full responsibility for the performance of its obligations under the Contract.

Section 8.3.7 is added as follows:

The Owner shall not be liable to the Contractor for any expenses, damages, loss of profits (anticipated or otherwise) or charges of any nature whatsoever which shall result from the Owner's granting of an extension of the time of completion to any contractor or which shall result because of any delay or hindrance of any nature whatsoever in the progress of the Work, whether such delay or hindrance shall be avoidable or unavoidable. The time of completion (which shall give effect to any extensions of time of completion which shall be granted by the Owner) shall be of the essence of the Contract and Contract Documents.

Section 8.3.8 is added as follows:

Before starting the Work, the Contractor shall submit a Work Progress Chart, week by week, for the entire estimated period of performance of the Work. In the event it becomes apparent to the Contractor that a delay of any nature will cause a deviation from the schedule set forth in the Work Progress Chart, the Contractor shall immediately notify the Architect in writing of such fact and shall provide to the Owner and the Architect satisfactory proof of diligent efforts to rectify the delay.

Section 8.3.9 is added as follows:

Damages will result to the Owner by virtue of the failure of the Contractor to substantially complete this Project not later than the date set forth in the Contract. It is therefore agreed that liquidated damages as set forth in the Instructions to Bidders shall be charged and payable by the Contractor to the Owner for each

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calendar day, or part thereof, of delay beyond the Substantial Completion Date. The Contractor acknowledges and agrees that these damages are conclusively reasonable and are not in any way punitive. In no case shall the total assessed damages be limited to any specific fixed sum. The Owner agrees that the date when such liquidated damages shall cease to accrue shall be the date that the Architect advises Owner that the Project is substantially complete and that a Use and Occupancy Permit has been issued.

ARTICLE 9 - PAYMENTS AND COMPLETION

Section 9.3.1 is deleted in its entirety and the following is substituted therefor:

In accordance with the Owner-Contractor Agreement, the Contractor's itemized applications for payment for operations completed in accordance with the Schedule of Values shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from subcontractors and material suppliers and prevailing wage payment certifications. Such applications shall reflect the required retainage, as set forth in the contract documents.

Section 9.3.1.1 is deleted in its entirety and the following is substituted therefor:

Architect and Owner approved requests for payments, or portions thereof, will be paid by Owner within thirty-two (32) days of the Architect's receipt of the request for payment less retainage as set forth in the contract documents. The Architect must review completed applications for payment within seven (7) days of receipt of same from the Contractor. Applications for payment resulting from construction Change Directives and construction Change Orders require approval of the Board of School Directors; payment on same may be made outside of the thirty-two (32) day period set forth above, but will be paid promptly upon Board approval.

Section 9.3.2.1 is added as follows:

In order for storage of materials offsite the Contractor must provide proof of purchase, proof of applicable insurance, must be located within a 50 mile radius of the project site, and must be visually inspected by the Owner or Architect.

Section 9.6.1 is deleted in its entirety and the following is substituted therefor:

The Owner shall make a determination with respect to and make payment in the manner and within the time provided in the Contract Documents but no recommendation or certification of the Architect with respect to same shall be binding upon Owner.

Section 9.7, including its subsection, is deleted in its entirety.

Section 9.8.1 is amended by addition of the following at the end thereof:

In no event shall the Work be deemed substantially complete until such time as the Contractor has obtained a Use and Occupancy Permit for the Project.

Section 9.8.3 is deleted in its entirety and the following is substituted therefor:

Upon receipt of a Certificate of Substantial Completion from the Architect, the Owner shall make its own assessment as to whether the Work is substantially complete under the terms of the Contract. Owner shall not be bound by certification by the Architect with respect to Substantial Completion. Payment to the Contractor upon Substantial Completion shall be in the same manner as progress payments.

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Section 9.10.1 is amended by addition of the following sentence at the end thereof:

Upon Final Completion of the Work and the Architect's final certificate for payment, the Owner shall make its determination with respect to Final Completion. A Certificate by the Architect with respect to Final Completion shall not be binding upon the Owner.

Section 9.10.2 is amended by adding the following sentence at the end thereof:

The request for final payment must contain a certification of compliance with the Prevailing Wage Act.

Section 9.10.3 is amended by deletion of the last sentence thereof.

Section 9.10.5 is added as follows:

The making of final payment shall not constitute a waiver of any claims by the Owner, including, without limitation, those arising from:

- (a) Liens, claims, security interests, or encumbrances arising out of the Contract and unsettled;
- (b) Faulty or defective Work;
- (c) Failure of the Work to comply with the requirements of the Contract Documents; or
- (d) Terms of any special warranties required by the Contract Documents.

Section 9.10.6 is added as follows:

The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the Architect nor the issuance of a certificate of Substantial Completion or Final Completion, nor any payment by the Owner to the Contractor under the Contract Documents, nor use or occupancy of the Work or any part thereof by the Owner nor any failure to do so, nor the issuance of notice of acceptability by the Architect, nor any correction of defective Work by the Owner shall constitute an acceptance of Work not in accordance with the Contract Documents (as may be amended in writing from time to time) shall constitute a release of the Contractor's obligation to perform the Work in accordance with the Contract Documents.

Section 9.10.7 is added as follows:

At the time of signing the Agreement, the Contractor shall execute a separate agreement waiving, for himself and all subcontractors and material suppliers, the right to file any lien against the building. The waiver shall be filed with the Prothonotary prior to starting work on the Project. At the completion of the Work, the Contractor shall furnish a complete and executed Release of Liens. Final payment shall not be due until the Release of Liens is furnished to the Architect.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

Section 10.1.4 is deleted in its entirety and the following is substituted therefor:

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Contractor agrees that it will not use nor permit to be used by any of its subcontractors, any asbestos containing materials in the Work. Contractor must submit a signed letter at the completion of the Work certifying that it has complied with this Section.

Section 10.2.1 is amended by the addition of a new subsection as follows:

- .4 When the Contractor is using any compressed or liquefied gas, or any highly flammable liquid, the containers or tanks must be securely tied or chained to a fixed structure.

ARTICLE 11 - INSURANCE

Section 11.1.2 is deleted in its entirety and the following is substituted therefor:

Contractor shall purchase required insurance from a company or companies lawfully authorized to do business in the Commonwealth of Pennsylvania which company or companies must have a BEST rating no lower than "A-" and be no lower than a CLASS VII. The Contractor must secure insurance of the following types and in the following limits, at a minimum:

1. Workers' Compensation - Insurance as required by the Commonwealth of Pennsylvania or any applicable labor union contracts, whichever is higher;
2. Comprehensive General Liability - including Premises - Operations; Independent Contractors Protective; Products and Completed Operations; Broad Form Property Damage and Contractual Liability
 - (a) Combined Single Limit \$1,000,000
 - (b) Liability Insurance shall provide X, C, or U coverage, as applicable
3. Comprehensive Automobile Liability and Truck Insurance with a combined single limit of no less than \$1,000,000;
4. Umbrella Excess Liability Insurance with a minimum limit of liability of \$4,000,000 for each occurrence;
5. Professional Liability Insurance for delegated design responsibilities with a minimum limit of liability of \$1,000,000 for each occurrence.

The general liability and umbrella excess policies shall name the Owner and the Architect as additional insureds and shall include coverage for the following:

1. Explosion, Collapse and Underground Liability, as applicable;
2. Contractual Liability;
3. Products and Completed Operations Liability;
4. Owner's and Contractor's Protective Liability;
5. Blasting - in an amount sufficient to cover any damage suffered by the Owner and/or the general public;

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6. Building Collapse - in an amount sufficient to cover damages suffered by Owner and/or the general public, but no less than \$1,000,000;
7. Contractual Liability;
8. Independent Contractor's Liability;
9. Automobile Liability and Truck Insurance in an amount not less than \$1,000,000 as a combined single limit; and
10. Public Liability and Property Damage.

Section 11.1.3 is deleted in its entirety and the following is substituted therefor:

Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to the commencement of Work. Said certificates shall contain the following provisions:

- (a) That the Owner and the Architect are included thereon as additional insureds, with the exception of professional liability; and
- (b) That the coverage afforded by the policies will not be canceled, allowed to expire or materially changed until at least thirty (30) days' prior written notice has been given to the Owner. All such insurance shall remain in effect until final payment and at all times thereafter when the Contractor may be correcting, removing or replacing defective Work in accordance with the Contract Documents. If any of the foregoing insurance coverages are required to remain in force after final payment, an additional insurance certificate evidencing continuation of such coverage shall be submitted with the final application for payment. If the Owner has any objection to the coverage afforded by, or other provisions of, the insurance required to be purchased and maintained by the Contractor on the basis of its failure to comply with the Contract Documents, the Owner shall notify the Contractor in writing within thirty (30) days of delivery of the certificates to the Owner. The Contractor shall provide to the Owner such additional information with respect to the insurance as the Owner may request. Failure of the Owner to timely object shall not constitute a waiver of Owner's rights and Contractor's obligation to provide insurance coverage as specified in the Contract Documents. Any amendments or endorsements to coverage shall be promptly furnished to the Owner by the Contractor.

Section 11.2.1 is deleted in its entirety and the following is substituted therefor:

The Owner shall be responsible for purchasing and maintaining its own liability insurance and, at its option, may purchase and maintain such other insurance as will protect Owner against claims which may arise from operations under the Contract. Unless otherwise provided in the Contract Documents, the Owner shall purchase and maintain property insurance upon the Work at the site in the full insurable value thereof subject to such deductible amounts as may be provided in the Contract Documents or required by law.

Sections 11.3.1, 11.3.1.1, 11.3.1.2, 11.3.1.3, 11.3.1.4, 11.3.2 and 11.3.3 are deleted in their entireties and the following **Section 11.3.1** is substituted therefor:

Owner's property insurance shall include the interests of the Owner and the Architect in the Work. Such insurance shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage, including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Contract Documents. Said insurance shall include losses and expenses arising out of or resulting from any insured loss or loss incurred in the repair or replacement of any insured property, including fees and charges of architects, engineers, attorneys and

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other professionals. If not covered under the "all risk" insurance or otherwise provided in the Contract Documents, the Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off site or in transit when such portions of the Work are to be included in an application for payment. The policies of insurance required to be purchased and maintained by the Owner shall contain a provision that the coverage afforded shall not be canceled or materially changed until at least thirty (30) days' prior written notice has been given to the Contractor. The Owner shall not be responsible for purchasing and maintaining any property insurance to protect the interests of the Contractor, subcontractors, sub-subcontractors or the Architect in the Work to the extent of any deductible amounts that are provided in the Contract Documents. If the Contractor desires to obtain property insurance coverage within the limits of such deductible amounts, the Contractor may purchase and maintain same at its own expense.

Section 11.3.6 is deleted in its entirety and the following is substituted therefor:

The Owner shall file a copy of all policies with the Contractor before an exposure to loss may occur. If the Contractor has an objection to the coverage afforded by, or other provisions of, the policies of insurance purchased by Owner on the basis of failure of same to comply with the Contract Documents, the Contractor shall notify the Owner in writing within ten (10) days of delivery of such certificates to the Contractor. The Owner shall provide the Contractor such additional information with respect to the insurance provided by Owner as the Contractor may reasonably request. Failure by the Contractor to give such notice of objection within the time provided will constitute acceptance of such insurance purchased by the Owner as complying with the Contract Documents.

Section 11.3.9 is deleted in its entirety and the following is substituted therefor:

Upon occurrence of any insured loss, the Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If, after such loss, no other special agreement is made, replacement of damaged Work shall be covered by an appropriate Change Order.

Section 11.3.10 is deleted in its entirety and the following is substituted therefor:

The Owner, as fiduciary, shall have the power to adjust and settle any loss with the insurers.

Section 11.4.1 is deleted in its entirety and the following is substituted therefor:

At the time of execution of the Agreement, the Contractor shall provide Owner with a Performance Bond and Maintenance Bond, and a Labor and Materialmen's Bond, with a surety company approved by the Owner on the specific forms for same included in the Specifications. Contractor is advised that said forms of bond are not identical to standard AIA form bonds. Said bonds shall be in an amount of 100% of the Contract price. The Contract Bonds required shall have as surety thereon a corporation duly authorized to conduct business in Pennsylvania which is satisfactory to the Owner. The bond shall be provided by a surety with a Best rating of "A-" or better.

A new **Section 11.5.1** is added as follows:

The Contractor agrees to accept, insofar as the Work covered by the Contract is concerned, the provisions of the Workers' Compensation Act of 1915, and any supplements or amendments thereto which have and which may hereafter be passed; and the Contractor will insure his liability thereunder, or file with the Commonwealth of Pennsylvania and with the Owner, a certificate of exemption of insurance from the Bureau of Workers' Compensation of the Department of Labor and Industry in accordance with the provisions of the Act of the General Assembly of the Commonwealth of Pennsylvania, approved July 18, 1917 (PL1083) as amended, and all other provisions of the Workers' Compensation Law now in force.

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The Contractor shall provide insurance covering special hazards, as herein specified, and he shall supplement the insurance specified with additional insurance to cover himself and the Owner from any and all hazards encountered.

Neither the Contractor nor any subcontractor shall commence Work under the Contract until the Contractor has obtained all insurance required by the Contract Documents and such insurance has been approved by the Owner. The insurance certificates shall be issued covering all subcontractors as well as the Contractor.

Unless such employees are covered by the Contractor's Workers' Compensation Policy, the Contractor shall require and provide proof that each subcontractor provides Workers' Compensation insurance for all of their employees and sub-subcontractors.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

Section 12.1.2 is amended by deletion of the last sentence therein and by substitution of the following therefor:

If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner or separate contractor responsible shall pay such costs.

Section 12.2.1 is amended by deletion of the first sentence thereof and by substitution of the following therefor:

The Contractor shall promptly correct Work rejected by the Architect or Owner or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed.

Section 12.2.4 is deleted in its entirety and the following is substituted therefor:

If the Contractor fails to correct non-conforming or defective Work within a reasonable time, the Owner may correct it in accordance with Section 2.4.1. If the Contractor does not pay the cost of such removal and storage within ten (10) days, the Owner may dispose of the material in the most expeditious way. Costs incurred shall be charged to the Contractor by Change Order. If payments due the Contractor are insufficient to cover such amount, the Contractor shall pay the difference to the Owner.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

Section 13.3.2 is added as follows

Written notice shall be by means of electronic email.

Section 13.4.1 is deleted in its entirety and the following is substituted therefor:

The duties and obligations imposed by the Contract Documents and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon the Contractor and all of the rights and remedies available to the Owner and the Architect hereunder, shall be in addition to and shall not be construed in any way as a limitation of rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guarantee or other provision of the Contract Documents. The provision of this Section shall be as effective as if repeatedly specified in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and

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guarantees made in the Contract Documents shall survive the final payment and termination or completion of the Project and the Contract.

Section 13.4.2 is deleted in its entirety and the following is substituted therefor:

No act or failure to act by the Owner or Architect shall constitute a waiver of any right or duty afforded either of them under the Contract Documents, nor shall any such action or failure to act constitute an approval of or acquiescence to any breach thereunder, except as may be specifically agreed in writing.

Section 13.5.1 is amended by deletion of the last sentence thereof.

Section 13.5.2 is amended by deletion of the last sentence thereof and by substitution of the following sentence therefor:

If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents or the requirements of law, the Contractor shall bear all costs thereof, including compensation for the Architect's additional services made necessary by such failure; otherwise, the Owner shall bear such costs and an appropriate Change Order will be issued.

Section 13.5.3 is deleted in its entirety and the following is substituted therefor:

If such procedures for testing, inspection, or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor The Contractor shall bear all costs made necessary by such failure including those of repeated procedures, including additional testing and inspections, and compensation for the Architect's services and expenses.

A new **Section 13.8.1** is added as follows:

In the event the Owner demands arbitration pursuant to Section 4.3, such arbitration shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, then obtaining, unless the parties mutually agree otherwise. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation, joinder or in any other manner, parties other than the Owner, the Contractor and any other person substantially involved in a common question of law or fact, whose presence is required if complete relief is to be accorded in the arbitration. In the event of such arbitration, the award rendered by the arbiters shall be final and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

Notice of Owner's demand for arbitration shall be filed in writing with the Contractor and with the American Arbitration Association, and a copy thereof shall be filed with the Architect. The demand for arbitration shall be made within the time limit specified in Section 4.3 where applicable but in no event shall be made after the date when institution of legal or equitable proceedings based upon such claim, dispute or other matter in question, would be barred by the applicable statute of limitations.

Unless otherwise agreed in writing by the Owner, Contractor shall carry on the Work and maintain its progress during any dispute with the Owner and the Owner shall continue to make payments, except as to any disputed amount, to the Contractor in accordance with the Contract Documents.

A new **Section 13.9** entitled "Prevailing Wage Rates", is added as follows:

13.9 Prevailing Wage Rates

Section 13.9.1

The Contractor shall pay no less than the prevailing wage rates, including contributions for employee benefits, as determined in the decision of the Secretary of Labor and Industry and shall comply with the provisions of the Pennsylvania Prevailing Wage Act, approved August 15, 1961, as amended (43 P. S. § 165-1 et seq.), and the regulations issued pursuant thereto. With respect to the wages to be paid, the Contractor shall comply with the requirements specified in the Commonwealth of Pennsylvania Department of Labor and Industry Prevailing Wage Determination and General Wage Decision #PA 02-1051

Section 13.9.2

The requirements of this Article shall apply to all Work performed on the Project by the Contractor, as well as all Work performed on the Contract by subcontractors and sub-subcontractors. Contractors shall insert the stipulations required in this Article in all its contracts with subcontractors.

Section 13.9.3

No workers shall be employed on the Project except in accordance with the classification set forth in the decision of the Secretary referenced in Section 13.9.1. A schedule of prevailing wage rates is included in the Specifications.

Section 13.9.4

All workers employed or working on the Project regardless of whether any contractual relationship exists or the nature of any contractual relationship which may be alleged to exist between any contractor, subcontractor and workers, shall, not less than once a week, be paid the full amount due at the time of payment, computed at the rate applicable to the time worked in the appropriate classification, without deduction or rebate on any account, either directly or indirectly, except authorized deductions.

Section 13.9.5

For the entire period of construction, the Contractor and each subcontractor shall post the wage determination decisions of the Secretary of Labor, including the effective date of any changes thereof, in a prominent and easily accessible place or places at the Work site, and at the place or places used by the Contractor and subcontractors to pay workers their wages. This notice of wage rates shall contain the following information: (a) name of the project; (b) name of public body for which it is constructed; (c) the crafts and classifications of workers listed in the Secretary's General Prevailing Minimum Wage Determination for the project; (d) the general prevailing minimum wage rates determined for each craft and classification and the effective date of any changes; and (e) a statement advising workers that if they have been paid less than the general prevailing minimum wage rate for their job classification or that the Contractor or subcontractor are not complying with regulations of the Secretary of Labor and Industry in any manner whatsoever, that they may file a protest in writing with the Secretary of Labor and Industry within three (3) months of the date of the occurrence, objecting to the payment to any Contractor to the extent of the amount or amounts due or to become due to them for any wages for Work performed on the Project. The notice shall also state that the workers will have a civil right of action for any rate which is paid which is less than that specified in the Contract, which right of action must be exercised within six (6) months of the occurrence of the event creating such right.

Section 13.9.6

Apprentices shall be limited to such numbers as shall be in accordance with a bona fide apprenticeship program registered with and approved by the Pennsylvania Apprenticeship and Training Council. Only apprentices whose training and employment are in full compliance with the provisions of the Apprenticeship and Training Act, approved July 14, 1961, and the rules and regulations issued pursuant thereto, shall be employed on this Project.

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Section 13.9.7

Payment of compensation to workers for work performed on this Project on a lump sum basis or a piece work system, or a price certain for the completion of a certain amount of work, or the production of a certain result shall be a violation of the Prevailing Wage Act and the regulations issued pursuant thereto, regardless of the average hourly earnings resulting therefrom.

Section 13.9.8

Failure to pay the wage rates specified herein shall, in addition to the other penalties provided in the Prevailing Wage Act, make the Contractor liable to the Owner for a penalty in an amount equal to the difference between the wages specified in the Contract and the wages actually paid to the laborer or employee.

Section 13.9.9

All such penalties withheld and deducted for use of the Owner from any monies due the Contractor shall be returned to the Contractor, if any such Contractor or subcontractor subsequently pays to all laborers and employees the balance of the amounts stipulated in the Contract.

Section 13.9.10

Every Contractor and subcontractor shall keep an accurate record showing the name, craft and the actual hourly rate of wage paid to each of the workers and such record shall be preserved for two (2) years of payment. The record shall be open at all reasonable hours to the inspection of the Owner, the Architect and the office of the Secretary of the Department of Labor and Industry.

Section 13.9.11

On a monthly basis, and before progress or final payments are made of any sums due on the Project, the Contractor and subcontractors shall file statements with the Owner or its designee, in a form satisfactory to the Secretary of the Department of Labor and Industry, certifying to the amounts then due and owing from such Contractor and subcontractors, to any and all workers for wages due on account of Work, setting forth therein the names of the persons whose wages are unpaid and the amount due to each respectively. This statement shall be verified by the oath of the Contractor and subcontractors, as the case may be, that he has read such statement subscribed by him, knows the contents thereof and that the same is true to the best of his own knowledge. Nothing contained herein shall impair the right of a Contractor to receive final payment because of the failure of any subcontractor to comply with the provisions of the Prevailing Wage Act.

A new **Section 13.10** entitled "School Code" is added as follows:

13.10 School Code

Section 13.10.1

All Contract Documents will be entered into under and subject to the provisions of the Act of Assembly of the Commonwealth of Pennsylvania, Act #442 effective February 1, 1962, as amended by Act #342, approved August 9, 1963 and in accordance with the provisions of the Public School Code of 1949, P.L. 30, its amendments and supplements, and regulations of the Department of Education. The successful Bidders agree to satisfy the Board concerning all of the requirements of the laws of the Commonwealth of Pennsylvania governing bidders and contractors on contracts with a school district.

Section 13.11.1.2 Nondiscrimination Clause - During the term of this Contract, Contractor agrees as follows:

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Contractor shall not discriminate against any employee, applicant for employment, independent contractor or any other person because of race, color, religious creed, ancestry, national origin, age or sex. Contractor shall take affirmative action to ensure that applicants are employed, and that employees or agents are treated during employment without regard to their race, color, religious creed, ancestry, national origin, age or sex. Such affirmative action shall include, but is not limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training. Contractor shall post in conspicuous places, available to employees, agents, applicants for employment and other persons, a notice to be provided by the contracting agency setting forth the provisions of this nondiscrimination clause.

Section 13.11.1.3

Contractor shall in advertisements or requests for employment placed by it or on its behalf state all qualified applicants will receive consideration for employment, without regard to race, color, religious creed, ancestry, national origin, age or sex.

Section 13.11.1.4

Contractor shall send each labor union or worker's representative with which it has a collective bargaining agreement or other contract or understanding, a notice advising said labor union or worker's representative of its commitment to this nondiscrimination clause. Similar notice shall be sent to every other source or recruitment regularly utilized by the Contractor.

Section 13.11.1.5

It shall be no defense to a finding of noncompliance with Contract Compliance Regulations issued by the Pennsylvania Human Relations Commission or this nondiscrimination clause that the Contractor had delegated some of its employment practices to any union, training program or other source of recruitment which prevents it from meeting its obligations. However, if the evidence indicates that the Contractor was not on notice of the third-party discrimination or made full faith effort to correct it, such factor shall be considered in mitigation in determining appropriate sanctions.

Section 13.11.1.6

Where the practices of a union or any training program or other source of recruitment will result in the exclusion of minority group persons, so that the Contractor will be unable to meet its obligations under the Contract Compliance Regulations issued by the Pennsylvania Human Relations Commission or this nondiscrimination clause, Contractor shall then employ and fill vacancies through other nondiscriminatory employment procedures.

Section 13.11.1.7

Contractor shall comply with the Contract Compliance Regulations of the Pennsylvania Human Relations Commission, 16 Pa. Code Chapter 49, and with all laws prohibiting discrimination in hiring or employment opportunities. In the event of the Contractors noncompliance with the nondiscrimination clause of this Contract or with any such laws, this Contract may, after hearing and adjunction, be terminated or suspended in whole or in part, and the Contractor may be declared temporarily ineligible for further contracts with Owner, and such other sanctions may be imposed and remedies invoked as provided by the Contract Compliance Regulations.

Section 13.11.1.8

The Contractor shall furnish all necessary employment documents and records to, and permit access to its books, records and accounts by, the Owner and Human Relations Commission, for purposes of determining compliance with the Contract Compliance Regulations. If the Contractor does not possess documents or records reflecting the necessary information requested, it shall furnish such information on reporting forms supplied by the Owner or the Commission.

Section 13.11.1.9

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Contractor shall actively recruit minority subcontractors or subcontractors with minority representation among their employees.

Section 13.11.1.10

Contractor shall include the provisions of this nondiscrimination clause in every subcontract, so that such provisions will be binding upon each subcontractor.

Section 13.12 is added as follows:

No Work shall be performed by the Contractor, any subcontractor or sub-subcontractor inside Owner's buildings unless Owner's personnel are present in the buildings at the time.

ARTICLE 14 - TERMINATION OF THE CONTRACT

Sections 14.1.1, 14.1.2 and 14.1.3 are deleted in their entireties and the following **Section 14.1.1** is substituted therefor:

If the Work is stopped for a period of sixty (60) days under any order of any court, or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a subcontractor or their agents, or employees or any other persons performing any Work under the Contract with the Contractor, then the Contractor may, upon seven (7) additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner for all Work executed. No other compensation shall be awarded except as Owner in its sole discretion may determine appropriate.

Section 14.2.1.5 is added as follows:

If the Contractor files a petition in bankruptcy, is adjudged bankrupt or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency, subject to all requirements and stipulations of the 1979 Federal Bankruptcy Law, as amended.

END OF SUPPLEMENTARY GENERAL CONDITIONS

DIVISION 1 - GENERAL REQUIREMENTS

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Section 1 - SUMMARY OF THE WORK

A. The work includes but is not limited to:

Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS, & CHS for the Tredyffrin/Easttown School District

C. The location of the projects are:

Devon Elementary School (DES)
400 S. Fairfield Road
Devon, PA 19333

New Eagle Elementary School (NEES)
507 Pugh Road
Wayne, PA 19087

Valley Forge Elementary School (VFES)
99 Walker Road
Wayne, PA 19087

Tredyffrin/Easttown Middle School (TEMS)
801 Conestoga Road
Berwyn, PA 19312

Valley Forge Middle School (VFMS)
105 W. Walker Road
Wayne, PA 19087

Conestoga High School (CHS)
200 Irish Road
Berwyn, PA 19312

Section 2 - CUTTING AND PATCHING

- A. Each Prime Contractor shall be responsible for the proper fitting of work in place, and for coordination with other Prime Contractors, subcontractors, and Owner's contractors in the proper fitting and building-in of said contractor's work with that of other contractors, subcontractors and with existing conditions.
- B. The Contractor shall form any holes, chases, recesses, and openings in building construction and finish materials, for existing, new or relocated plumbing, heating, electrical, special equipment, and all other utilities or building appurtenances. This shall include verification of data, which may be indicated dimensionally on the Drawings, as well as chases and openings required, but not shown. Generally stated, the Contractor who requires such penetrations to be made shall be responsible for making the penetration and sealing around the new, or relocated utility after installation, and to repair the wall/floor/grade to original condition. In all instances where cutting is required, the Contractor shall inform the Engineer/Architect in advance. No cutting will be permitted which endangers the stability or the structural quality of the building.
1. The exception is that any openings required in the roof or exterior building envelope shall be the responsibility of the General Contractor, and shall be performed by a technician (roofing subcontractor, mason and/or sealant subcontractor) who is skilled and experienced in the required trade.
 2. Layout of openings to be completed by the Prime Contractor installing the new work and must coordinate with the General Contractor.
 3. See also the Technical Sections (024119 & 070151) of these specifications for additional information. Take special note of roofing information for requirements of this trade.
 4. With regards to holes cored through exterior building envelope, the General Contractor shall not complete more than (1) hole in each exterior envelope system prior to review from Owner or Architect.

Section 3 - DEMOLITION

- A. Description of Work:
1. The extent of demolition is described herein and shown on the Drawings.
 2. Demolition includes removal and disposal of demolished materials, rubbish, abandoned equipment, flotsam and jetsam, etc., in the area of new construction, renovations and sitework; removal of miscellaneous fixed items presently located on the building site; and excavation for structures as shown on the Drawings.

3. Any work, which extends past the Contract Completion Date, and is duly subject to liquidated damages, and coincides with the school session, shall be scheduled as approved by the owner. Additionally, it must conform to the regulations of Tredyffrin Township.
 4. It is the intent that the Contractor will remove all items or equipment which will impede or restrict providing a space, surface or area as it was intended to be, or for the work of another contractor, subcontractor or Owner. This will include pipes, conduits, angles, dirt, debris, equipment, etc., even though they may not be exposed or shown on the Drawings.
- B. Responsibilities of Contractors - Demolition: The project includes renovations of the existing building and equipment. As clearly as possible, demolition responsibility is divided as follows:
1. Where required, demolition of electrical conduits, and other items described in Division 26, which are considered in the trade to be a part of electrical construction shall be demolished and removed from the site by a licensed electrical contractor.
 2. Demolition of ducts, fans, radiators, pumps, boilers, etc., and other items described in Division 23, which are considered in the trade to be a part of mechanical or HVAC construction, shall be demolished and removed from the site by the mechanical contractor.
 3. Demolition of plumbing fixtures, piping, valves, etc., which are considered in the trade to be a part of plumbing construction, shall be demolished and removed from the site by the plumbing contractor.
 4. When demolition is inferred, described or drawn as a necessary step to provide for the renovations, then this shall be included in the related contract.
 5. Interior and exterior walls, ceilings, soffits, partitions, stairs, floors, building appurtenances etc., shall be demolished and removed from the site by the General Contractor. It is the intent that this includes all material considered, in the trade, to be a part of general construction.
 6. Chases, holes, openings, etc., required by any of the subcontractors, in existing construction, shall be opened, closed and reinforced by the contractors requiring the opening, except that any openings in the existing roof, roof deck, and building envelope shall be made and closed by the General Contractor and roofing subcontractor. See also Section 2 of these General Requirements.
 8. Routes of ingress and egress, for bringing in materials and equipment and for removal of rubbish from areas in the existing site where renovation work is in progress, shall be subject to the restrictions of and in accordance with the instructions of the Architect and Owner and strictly in accordance with local and state laws and ordinances, and all authorities having jurisdiction.
 9. Pollution Controls: Contractors shall use water sprinkling, temporary enclosures, sweeping compounds, exhaust fans and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Temporary enclosures, for containing dust, dirt and debris must conform to requirements of authorities having jurisdiction. No additional compensation will be paid for complying with this provision.
 10. Contractors shall comply with governing regulations pertaining to environmental protection. Water will not be used when it may create hazardous or objectionable conditions such as ice, flooding or pollution.
 11. Contractors shall clean adjacent areas and improvements of dust, dirt, and debris caused by demolition operations, related to their scope of operations, as directed by the Architect, and return adjacent areas to conditions existing prior to the start of the work. Such cleaning shall occur daily.
 12. Except where indicated otherwise on the Drawings and specifications, or materials, or items of equipment to be retained by the Owner, all dismantled materials shall become the property of the Contractor and shall be removed from the premises in accordance with all laws, codes and regulations, and all authorities having jurisdiction. Recycling of materials and equipment not expressly required is strongly recommended.
 13. Demolition may proceed in any safe, feasible manner.
 - a. Masonry walls shall be demolished in small sections. Remaining sections will be properly braced during the work and at the end of each day.
 - b. Windows and door frames shall not be removed until the work has progressed down to their elevation in the walls.

14. Any contractor operating in the area of an existing utility line or any operating service line shall be responsible for maintenance of that line during the operation or relocation in order to avoid interruption in operation. Any break in any line will be repaired according to the requirements of the code or the utility company by the contractor responsible for the break. All contractors doing excavating or demolition should carefully investigate the areas to be excavated or demolished prior to beginning the work. Contact **Pennsylvania One Call System, Inc., 800-242-1776**, a minimum of three days prior to any digging operation, to locate underground utility lines, per Pennsylvania Law. It is the responsibility of the contractors doing the work to accurately locate all existing lines.
15. Refer to related sections of the Specifications for further information on this phase of the work.
16. Where demolition is performed and surfaces are left uneven, with holes, unpainted, or any other blemish, the contractor doing the demolition will be required to patch and repair that area to an equal level of finish, color and texture as the surrounding surfaces. The work must be performed by a contractor skilled in that trade.
17. Contractors responsible for protection of existing building elements that are to remain. Contractors responsible for costs to repair any damaged building elements to remain. Each Prime contractor responsible for protection of existing conditions within their scope of work, unless otherwise identified on the drawings or specifications.
 - a. ***When temporary protection (for existing or new construction) is required for the scope of work or when dictated by owner or architect, contractor is required to provide (at a minimum) Masonite protection board with taped seams for floor protection, plywood boards for roof protection, and exhaust fans/filters with sealed air barriers at openings for protection of out of work scope areas from dust. All temporary protection shall be at no extra cost to the owner. Contractor is responsible for installation and removal of temporary protection.***

Section 4 - PERMITS, LICENSES, AND CERTIFICATIONS

- A. The **owner** shall apply for and procure all applicable permits and licenses and give all notices necessary for the commencement of their work. It shall be the Owner's responsibility to pay for a local "building" permit, which will be obtained from and required by the Tredyffrin Township. The contractor shall be required, however, ***to coordinate with owner.*** All other permits and contractor registration fees and licenses shall be obtained and paid for by the contractors. The contractors are responsible for contacting the Township and Chester County to determine all permits, licenses, applications, etc. which are required as part of this project.

Section 5 - PROJECT MEETINGS

- A. Regular job progress meetings will be held weekly, at which the Contractor shall be present, for the purpose of coordinating the work. If particular subcontractors would add needed information at a meeting, then that subcontractor should be present. The contractors' representative attending these meetings shall be fully authorized to represent said contractor in the matters brought before the meeting and shall have a full understanding of the field activities of both the contractor's own forces and those of the contractor's subcontractors. The Architect may, at the Architect's discretion, require each contractor to be represented by both their project manager and their construction superintendent (foreman). The Architect shall publish minutes of the meeting and distribute them to all interested parties.
- B. **All Prime Contractors** shall submit in writing at each job meeting a list of work completed during the previous week, or time period between job meetings, and the work proposed to be completed during the subsequent week. Any and all verbal instructions from the Architect received by the Contractor during the week should be noted on the Contractor's set of drawings and brought up at the next meeting to become a matter of record.

- C. A job information sheet will be given to the Contractor at the pre-construction meeting, which will cover minor responsibilities of the Contractors such as number of submissions, emergency numbers, procedures, etc., as noted in these General Requirements and the Supplementary General Conditions contained in these Specifications.

Section 6 - JOB SITE ADMINISTRATION

- A. Access to the construction sites shall be as directed by the Owner and the Township. If necessary for safety, movable barricades to be furnished by the General Contractor and used by the contractors. Establishing and maintaining this access will be the responsibility of the General Contractor.
1. Contractors will be required to sign-in and sign-out when entering or leaving the site.
 2. The District has a Security Guard assigned to each School. Every day Security Guard will validate Background Checks, have contractors sign-in, Issue and ID that must be returned at end of day
- B. It is the intent that at times when the contractors are not reliably represented on the site, they shall be responsible for securely closing all openings and for locking any other possible means of access which are being used in connection with their construction contract.
- C. Offices, sheds, toilets, lay down areas, etc., shall not be located without prior approval of the Owner and Architect. All supplies and/or equipment delivered to the site must be stored, according to the manufacturer's written recommendations, outside the existing building unless prior approval is granted by the Owner and the Architect. The storage of supplies and/or equipment must be carried out so as not to void warranties, and to protect from damage and vandalism.
- D. Work Area: The Contractor shall keep his operations and storage of materials within as small an area at any one time as is feasible. He shall meet with the Architect and Owner to establish the work area and notify them and receive their approval for any required changes. It shall be the Contractors' responsibility to study the proposed schedule included in the Contract Documents and make the necessary allowances and preparations for safe operations. Any relaxation of this schedule must be agreeable to the Owner, Contractor and Architect.
- E. The Contractor shall be responsible for the behavior of such Contractor's workmen. Inappropriate language will not be tolerated and will be cause for removal from the project. Contractor social interaction with students will not be tolerated and will be cause for removal from the project. Use of "Boom Box" radios will not be allowed. Smoking is not permitted in or on school district property.
- F. Notice to the Owner shall be made and all provisions agreed upon before commencing any movement of men or materials, or performance of any of the work outside of the protected limits. Normal traffic area must remain unobstructed, and any required change in these travel patterns must be worked out with the Owner and Township beforehand.
- G. Except for Second-Shift hours, provided for the in the contract, the Contractor must reimburse the Owner and Owner's Representative for security beyond the normal work hours, 7:00 AM through 3:30 PM, Monday though Friday. See Section 12 of the Instructions to Bidders.
- | | | |
|--------------|--------------------------------|---------------|
| The cost is: | Monday through Friday | \$64.00 /hour |
| | Saturday, Sunday, and Holidays | \$85.00/hour |
- H. Contractor's shall provide a list of phone numbers where the job superintendent and two responsible members of the organization can be reached in an emergency by the Owner or the Architect. These contact numbers shall include 24 hour, 7 days per week contacts for use in an emergency. If contractor does not respond to an emergency, the Owner reserves the right to respond and charge the Contractor for any costs incurred by the School District.

- I. Each Prime Contractor shall maintain a full-time site superintendent throughout the entire course of construction (from the start of the work through completed punch list), and who shall be present on site at all times the Contractor's staff, subcontractors, or other Prime Contractors' staff or subcontractors are present. The Contractor shall maintain the same superintendent from the start of the project until finished closeout. Regular contractor's job site superintendent and work staff must sign in and out daily with the Owner's representative.
 - 1. Each Prime Contractor shall keep a written log showing the condition of the existing building, daily weather conditions, condition of the new work, and schedule of progress. In addition, this log shall include lists of workmen on site, identified by trade. This log shall be available to the Owner upon request at any time throughout the work and shall be included in the Closeout Materials provided at the end of the job.
 - 2. Shop drawing log requirements are described below.
 - 3. Weekly Superintendent meetings.
- J. Contractors to submit a "Request for Shutdown" to Owner 7 days in advance, via email.

Section 7 - CONSTRUCTION SCHEDULE

- A. The **General Contractor** will be responsible for producing and distributing a comprehensive project schedule, within 2 (two) weeks after the Award of the Project, to the Owner, the Architect, and to all other Prime Contractors. All contractors must review the schedule and incorporate their schedules on the General Contractor's master. A final schedule, revised by the General Contractor, will be derived from this input, and distributed to the parties noted above, no later than 4 (four weeks) after Award of the Project. Schedule Updates to be provided on a weekly basis.
- B. **All Prime Contractors** shall provide a list of subcontractors, subsubcontractors, material suppliers and/or installers, and proposed dates for submissions of shop drawings. The list of subcontractors shall be submitted within two weeks of the contract award.
- C. A shop drawing schedule will be required of each Prime Contractor, to indicate length of delivery time, any long lead items, submission date, a reasonable turn around time, and expected delivery date of the product and approximate date(s) for incorporation into the work.
- D. Each Prime Contractor shall maintain a Daily Log of construction activities, entrance and commencement of trades on site, deliveries, and agreements made. Notation shall be included of inspections made by authorities having jurisdiction, or by the Owner's inspection and testing agency. In addition, when there are items for which time and materials calculations must be determined, the Daily Log shall reflect the time for each workman expended directly to address the item.
- E. Though not a part of the work schedule, the Contractors are advised that all work occurring on or after **August 18, 2027**, and subject to liquidated damages, shall be performed on Second Shift, 3:30pm to 11:00 pm at no additional cost to the Owner.
- F. Primes working overtime and shift work is at Prime Contractors expense and not additional cost to TESD; including work performed after substantial completion
- G. Project Coordinator will prepare a preliminary combined Contractors' construction schedule for entire Project, which is included in the Contract Documents. Project Coordinator shall create a detailed CPM schedule.
 - 1. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2. Refer to Specification Section 01041 – Project Coordination Multiple Primes Contracts for additional information.
- H. When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

Section 8 - CONSTRUCTION NOISE CONTROL

- A. As defined by Township Ordinance

Section 9 - SHOP DRAWINGS, SAMPLES, & SPECIFICATIONS

- A. Shop drawings required by Article 4 of the General Conditions shall be checked, dated, stamped and signed by the submitting contractor prior to issuing them to the Architect/Engineer. When submitted, the contractor asserts that they conform to measurements at the site, the requirements of the contract documents, and the requirements of all trades whose work must be coordinated with that shown on the Drawings.
- B. Emphasis shall be on the expediting of shop drawings of long delivery items and early installation work, so that no delays will occur. Work covered by shop drawings shall not be started until final review has been made, is given by the Architect/Engineer, and the final, reviewed shop drawings are in the hands of the Contractor.
- C. Any omission by the Architect during the shop drawing review does not relieve the Contractor from conforming with the Contract Documents, Codes, laws and Manufacturer's Requirement.
- D. Submissions shall provide all information for a product to be completely and successfully ordered. All required information, including, but not limited to, samples, color samples of actual material (printed colors are not acceptable), textures, patterns, specifications, drawings, warranties, installation instructions, safety data sheets, etc., must be provided at the time of first submission.
- E. A current set of shop drawings and submittals with the Architect's approval stamp will be kept at the site at all times.
- F. The superintendent shall read the Specifications carefully in advance of the entry of the trade and/or material on the job. Each Prime Contractor shall provide Specifications for their Subcontractors' use. Superintendent shall confirm that Subcontractors have read Specifications prior to the starting of their work.
- G. All manufacturer's specifications should be kept on file at the job site. Provide material safety data sheets on all applicable products.
- H. See also Section 01330 – Submittal Procedures of these Specifications.

Section 10 – INSPECTIONS & TESTING

- A. The **Owner** will engage testing agencies for Environmental, Concrete and Steel Testing and Inspection, **as required.**

- B. Each Prime Contractor will provide Pre-Construction testing of materials **if required**, other than listed above.

Section 11 - LAYOUT DATA

- A. Before ordering material or doing any work, **the Contractor shall verify all measurements & elevations at the site.** No extra compensation will be allowed because of difference between actual measurements and dimensions shown, but such difference shall be referred to the Architect/Engineer for consideration before proceeding with the work.

Section 12 - PARKING

- A. Contractor's employees' cars shall be parked in a location approved by the Owner of the site. The contractors who park on the street, if allowed, shall be considerate of the residential neighbors who are paying for the project. All local parking regulations will be adhered to.

Section 13 - TEMPORARY ELECTRICITY

- A. Refer to Specification Section 01410 – Project Coordination Multiple Primes Contracts for additional information.
- B. Electrical Contractor shall extend electric service to a point convenient to each of the areas in which work will be performed. This location may be within the area of construction or immediately outside the area; in any case, it shall be a location acceptable to the General Contractor. The service to be provided, unless otherwise specifically mentioned in the Contract Specifications, shall be as required by for the equipment and as available from the existing facilities. This service shall be installed within three days after written request have been made to the electrical contractor, by a contractor requiring such service.
- C. Electrical Contractor to provide and pay for all maintenance, servicing, operation, and supervision of lines.
- D. Electrical Contractor to provide temporary wiring throughout the building, properly insulated and installed in a safe and workmanlike manner and per applicable codes. All maintenance for the system throughout the project shall be included.
- E. Electrical Contractor to provide 120V quad GFCI receptacles every 40 feet each floor, at a minimum. Receptacles shall conform to NEC and rules and regulations prescribed by OSHA as well as other agencies having jurisdiction. When such codes or regulations are inconsistent, the more stringent will prevail.
- F. Electrical Contractor shall extend electrical service to all construction and owner's trailers on the site as determined during the first job meeting.
- G. In addition to the electrical service provided for above, the electrical contractor shall install one work light in each room and shall service the lights and supply lamps as required.
- H. Temporary lighting and power should be provided in each phase within 5 days.
- I. Electrical Contractor shall provide a 100kW diesel generator that will need to run 24x7 during power outage period(s) for the electrical service relocation work.
- J. When the electrical lines and temporary lighting are no longer required, they shall be removed.
- K. The Owner will continue to pay for the electricity usage during construction.

Section 14 - TEMPORARY HEAT

- A. Refer to Specification Section 01410 – Project Coordination Multiple Primes Contracts for additional information.
- B. Each Prime Contractor is responsible for temporary heating, cooling, and ventilation as needed for their scope before weathertight enclosure of entire building is complete. Usage charges are responsibility of the owner. Where forbidden by codes and safe construction standards, temporary heating equipment fuels shall not be stored within the 'buildings'. Adequate temporary heating level must be maintained as per manufacturers requirements, but no temporary heating units can be left unattended while they are within the buildings.
- C. Mechanical Contractor is responsible for temporary heating, cooling, and ventilation after weathertight enclosure of entire building is complete and Owner will pay utility-use charges.
- D. The use of new heating or HVAC units for temporary heat or cooling will not be permitted, unless given written approval by the Architect, engineer, and owner. If this approval is granted, the equipment will be maintained by the contractor. Filters will be changed on a weekly basis and the warranty for the unit and its components will not start until the substantial completion date. All ducts and the unit will be cleaned at the end of the job to the satisfaction of the owner.

Section 15 - TEMPORARY WATER

- A. Plumbing Contractor to provide and maintain temporary water service from existing building for use during construction. Contractor shall provide two (2) ¾" hose bib connections. Locations to be coordinated with needs of all primes. Remove temporary waters service back to the source when directed by Owner and/or Architect.
- B. The source of the water shall be coordinated and approved by the owner.
- C. Electrical Contractor to provide all heat tracing associated with the Temporary Water as specified in plumbing primes scope of work.

Section 16a – TEMPORARY FIELD OFFICE

- A. NOT USED

Section 16 - TEMPORARY SANITARY FACILITIES

- A. The Contractors will not be allowed to utilize the toilet facilities at the school. The General Contractor shall provide temporary toilet facilities, and in a location agreeable to the Owner and the Township and complying with State and Local laws and Board of Health.
 - 1) Maintain, service and clean facilities on a regular basis but not less than twice per week.
 - 2) Quantity of toilets facilities shall be sufficient for use by all contractors and subcontractors' personnel.

Section 17 – TELEPHONE CONTACT

- A. Each Prime Contractor shall furnish cell phone contact information for their Project Manager and Field Site Superintendent, and Foreman at a minimum.

Section 18 - PROJECT IDENTIFICATION

- A. No nameplates, signs, bills, advertising or displays will be allowed at the site under construction.

Section 19 - CONSTRUCTION FENCES

- A. Laydown and Storage areas must be securely enclosed with a minimum of 6' high chain-link fence. Location shall be coordinated with the Owner and shall be acceptable to Authorities Having Jurisdiction. Each Prime Contractor shall be responsible for securing and paying for fencing. To the extent possible, Contractors are asked to work together to limit the amount of fencing required.

Section 20 - TREE AND PLANT PROTECTION

- A. No existing vegetation shall be cut, pruned, tied or removed unless and until the approval of the Owner is obtained. The contractors shall be held responsible for any such damage as a result of his contract. The Architect/Engineer shall determine responsibility for plant damage, and therefore who shall replace or restore the damaged tree or shrub. It is the Owner's intent that existing trees be carefully protected in the area of construction. Each Prime Contractor shall be responsible for protection associated with scope of work with a sound, rigid fence as described in the landscape documents. Lawns damaged by construction activities shall be repaired with sod and established by the Contractor before turning over to the owner.

Section 21 - PRODUCTS

- A. Proprietary Articles - In such case where fixtures, materials, or appliances of a special brand are specified without specifically stating that an approved equal may be substituted for them, it shall be understood that articles which are, in the opinion of the Architect/Engineer, of a quality necessary to meet the specifications, or superior in every respect to the originally specified fixture, material or appliance, may be substituted for them upon the written request by the Contractor and written consent by the Architect/Engineer. See also Section 16 of the Instructions to Bidders, and Section 22 below.
- B. Manufacturers' Specifications - Mention of a product by a specific name shall imply application of the manufacturer's specifications, except where more stringent specifications are mentioned elsewhere. A copy of the manufacturers' specifications, which apply shall be kept available at the job site. This shall include association specifications having bearing upon related work and work at the site but may be excluded where such qualifications concern only shop-made materials.
- C. Substitution of Alternative Materials - To the extent deemed necessary by the Architect/Engineer, producers of alternative materials will be required to furnish samples, literature, test and performance data, record of their installation, names of owners, Architect/Engineers, contractors and subcontractors as references, statement of current financial condition, and any other appropriate technical information. Refer to Instructions to Bidders, Section 16, for the procedure to be used for submission of Substitutes, and to Section 22 below.

Section 22 - STANDARDS OF QUALITY

- A. Standards of quality are established by description, by reference to trade names, or by reference to manufacturers' names. The various materials and products specified in this specification by name or description are given to establish a standard of quality and of cost for bid purposes.
- B. Where the term "or alternatives of the quality necessary to meet the specifications" may occur it acknowledges the presence of many similar products, unknown or known but not named, which may receive consideration by the Architect/Engineer where an advantage to the Owner might result, such as

lower cost, better quality, better color selection, better delivery, or other particulars. Do not base value of the work upon products not named in such instances. Consideration of such alternative products will be given based on difference in contract price where a price difference exists.

- C. These provisions are intended to place all bidders on an equal footing; it is not intended to make the documents restrictive, but rather to establish an absolute minimum standard.

Section 23 - CLEANING UP

- A. Cleanup is to receive constant attention from start to finish.
1. Each Prime Contractor shall be responsible for securing and paying for dumpsters and trash bins as required for the disposal of demolition and construction debris during the project. To the extent possible, Contractors are asked to work together to limit the quantity of dumpsters required on site at any one time, however, each Prime Contractor remains responsible for the debris of its trade.
 - a. If required, the Project Coordinator shall be responsible to coordinate the layout of the construction yard built on site, for exterior material storage, contractor offices, dumpsters, etc. The Project Coordinator shall receive space needs within the yard from all other Prime Contractors and shall issue a coordination drawing to the Owner, Architect, and other Prime Contractors, for the purpose organizing the use of this area and for maintaining this area as small as possible on site.
- B. The Contractors are responsible to remove Debris and Trash to the dumpster daily.
1. Owner to notify contractors in writing regarding any failure to clean up site accordingly. If the Contractor fails within seven (7) days after written notice from Owner to correct failures, the Owner may correct, remedy or complete such deficiency. All direct and indirect costs of the Owner exercising such rights shall be charged against the Contractor in an amount verified by the Architect and a Change Order shall be issued incorporating (a) the necessary revisions in the Contract Documents and (b) a reduction in the Contract sum.
- C. The Contractors shall protect all surfaces, fixtures and equipment in the area of the work, from dust and debris. If required, the contractor shall clean such surfaces, fixtures and equipment, at the conclusion of the work or intermittently as directed by Owner and/or Architect.
- D. The Contractors shall protect all exterior surfaces subject to damage by work vehicles, construction trailers, and/or materials storage. Any damage to hardscape (asphalt, concrete, etc.) and/or lawns and landscape, shall be repaired by the responsible Contractor to a condition equal to, or better than the original, undamaged surface, and at no additional cost to the Owner.

Section 24 – STRUCTURAL OR MEP DEFECTS

- A. Contractors shall report in writing to the architect any structural, mechanical or electrical defects that are exposed.
- D. No corrective work shall take place before the solution is reviewed with the Architect.

Section 25 - EXPOSED MEP COMPONENTS

- A. Any and all mechanical, electrical, and plumbing that is to be exposed in any occupied and/or furnished space shall require written approval from the Architect prior to its installation. The Architect will further

direct the location, attachment method, and finish treatment, that these components require as a result of being approved to be exposed.

Section 26 - RETAINAGE

- A. Retainage on completed work shall be made on each monthly payment in the amount of ten (10%) percent of the amount due the Contractor until 50% of the contract is completed.
- B. When the Contract is fifty (50%) percent completed, the retainage on completed work thereafter on each monthly payment shall be in the amount of five (5%) percent of the amount due the Contractor; provided that the Contractor is making satisfactory progress and there is no specific cause for greater withholding.
- C. Provided, however, that in the event that a dispute arises between the contracting body and the prime contractor, which dispute is based upon increased costs claimed by the Prime Contractor occasioned by delays or other actions of others, additional retainage in the sum of one and one-half times the amount of any possible liability may be withheld until such time as a final resolution is agreed to by all parties directly or indirectly involved, unless the Contractor causing the additional claim furnishes a bond satisfactory to the contracting body to indemnify such contracting body against the claim. However, all such monies retained by the contracting body may be withheld from the Contractor until substantial completion of the Contract.

Section 27 - TOUCH-UP AND REPAIR

- A. It is the responsibility of the Contractors to walk the project with the Owner and the Architect prior to the start of any work in an area to establish the existing conditions prior to any possible damage. Damage to a part of the existing project, which was not present at the start, which will remain, will be repaired or replaced by the Contractor doing the damage at no cost to the Owner.

Section 28 - ACT 287

- A. In accordance with Commonwealth of Pennsylvania Act 287, the Contractor must notify the appropriate underground utility companies at least 72 hours before any excavation is begun. See Section 3, Paragraph B, Item 14, of this General Requirements for the Pennsylvania One Call System, Inc. information.

Section 29 - PUMPING AND BAILING

- A. The Contractor will be responsible for removing accumulations of water at all times from the work while the work is in progress, regardless of whether caused by nature, accident, or otherwise. The water must be removed promptly and continuously, if necessary, in order to maintain the progress of all contractors.

Section 30 - WEATHER AND PROTECTION OF WORK

- A. The Contractor shall furnish and maintain proper protection for his work, existing facilities, and new and existing materials from damage by cold or inclement weather or windstorm, and if, in the opinion of the Architect/Engineer, any of the work or Contractor's materials, or other portions of the building, shall have been damaged or injured by reason of Contractor's failure to provide such protection, such damage or injury shall be rectified by that Contractor at his own expense (less any amount collectible under any insurance coverage in effect). There shall be no limit to the scope of this protection.

Section 31 - EQUAL OPPORTUNITY

- A. Prime Contractors and all subcontractors, performing any portion of the work, shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. Contractor shall take affirmative action to ensure that applicants are employed, and the employees are treated during employment, without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, demotion or transfer; recruitment of recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractors agree to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.
- B. Contractor and all subcontractors shall in all solicitations or advertisements for employees placed by them or on their behalf, state the all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

Section 32 - PUBLIC WORKS EMPLOYMENT VERIFICATION ACT REQUIREMENTS

- A. The Contractor and every subcontractor performing work under the contract shall utilize the E-Verify Program (EVP) operated by the United States Department of Homeland Security to electronically verify the employment eligibility of each new employee hired after January 1, 2013.
- B. The Contractor, as a precondition of the contract, shall submit the Public Works Employment Verification Form to the District along with its Payment Bond, Performance Bond, Certificates of Insurance and Form Contract.
- C. Every subcontractor shall submit a completed Public Works Employment Verification Form to the District prior to performing work on the Project.
- D. During the term of the Contract, each new employee hired by the Contractor, regardless of whether the employee will be working onsite or offsite of the Project, shall be verified within 5 business days of his or her start date.
- E. During the Project, a new employee hired by a subcontractor, regardless of whether the employee will be working onsite or offsite of a public work or otherwise, shall be verified within 5 business days of his or her start date.
- F. Subcontracts between the Contractor and its subcontractors and between subcontractors of any tier and their subcontractors are required to contain notification of the applicability of the Act, information regarding the use of EVP and reference to the Department's web site at www.dgs.state.pa.us to obtain a copy of the Form.
- G. The Contractor and all subcontractors shall cooperate with the Department during an investigation or audit arising under the Act.
- H. The Contractor and every subcontractor shall maintain documentation of continued compliance with the Act by utilizing the EVP for new employees hired throughout the duration of the public work contract.

Section 33 - AS BUILT DRAWINGS AND CLOSE OUT BINDERS

- A. All required documentation shall be furnished to the Owner and Architect in electronic form, in addition to the paper copy described below. Provide all information on **USB Drive (2 total)**.

- B. It will be necessary to produce "As-Built" drawings, at completion of the project, in order to receive final retainage monies. The necessary sets of base drawings will be furnished by the Owner to the contractor for **(1) one set** of such "As-Built" drawings.
- C. The Contractor will be responsible for documenting their respective work as well as their subcontractors' work. A job record of material delivery dates, commencement of significant installations, and other job issues shall be turned over to the Owner at the completion of the project.
- D. The Contractor shall always keep said contractor's project drawings up to date, marking final location data on them in colored pencil or ink. When requested, they shall mark all location and dimension data on a clean set of base drawings and send them to the Architect, certifying on the prints that the information shown has been verified and found correct. At the conclusion of the project, the Contractor will turn over to the Architect the original record set of field verified "As built" drawings and one exact copy.
 - 1. The Contractor shall mark the cover sheet of the "As-Built" set of drawings with their company name, address, phone number and website address, as well as with the title, "Contractor's As-Built Drawings".
- E. At the conclusion of the project the Contractor shall turn over to the Owner **one (1) three-ring binder** containing the following materials:
 - a. Written warranties on all equipment and material.
 - b. Specification sheets provided by manufacturers for all equipment and material (same as final, approved submittal).
 - c. Equipment and material maintenance manuals.
 - d. Final project accounting report indicating all change orders and final costs.
 - e. Executed Release of Liens.
 - f. See also General Conditions, Item 9.10.2 for additional Closeout Requirements.

END OF GENERAL REQUIREMENTS

FORM OF AGREEMENT

TREDYFFRIN/EASTTOWN SCHOOL DISTRICT AND CONTRACTOR

This agreement, made this day of , between The Tredyffrin/Easttown School District, 940 West Valley Road, Suite 1700, Wayne, Pennsylvania 19087, and the "Contractor".

The Contractor is:

The Project is: Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS, & CHS
for the Tredyffrin/Easttown School District

The Architect is: Heckendorn Shiles Architects
347 E Conestoga Rd
Wayne, PA 19087

The Owner and Contractor, intending to be legally bound hereby, agree as set forth below.

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, the Conditions of the Contract (General, Supplementary, and other Conditions), the Drawings, the Specifications, all Addenda issued prior to and all Modifications issued after execution of this Agreement. These form the Contract, and all are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the Contract Documents appears in Article 7. The Contract Documents represent the entire and integrated agreement between the parties hereto and supercedes prior negotiations, representations or agreements, either written or oral.

ARTICLE 2 THE WORK

The Contractor shall perform all the Work required by the Contract Documents.

ARTICLE 3 TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

The Work to be performed under this Contract shall be commenced as soon as this Contract has been executed and all of the start up documents, including but not limited to insurance, bonds, and permits, have been received and accepted in accordance with the Contract Documents. Subject to authorized adjustments, the phase dates of completion are as noted below. The date of Final Completion for the entire Project is **August 18, 2027**. See also the Instructions to Bidders for items of coordination that require specific Interim Deadlines.

All contractors and subcontractors shall cooperate with each other and shall coordinate their activities and work so that the entire program of construction can be completed on or before the date set forth above.

ARTICLE 4

CONTRACT SUM

The Owner shall pay the Contractor in current fund for the performance of the Work, subject to additions and deduction by Change Order as provided in the Contract Documents, the Contract Sum of

\$ _____

The Contract Sum is determined as follows:

Base Bid \$

TOTAL	\$
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ARTICLE 5

PROGRESS PAYMENTS

Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in the Contract Documents for the period ending the last day of the month as follows: Provided that an Application for Payment is received by the Architect not later than the last day of the month, the Owner shall make payment to the Contractor not later than the last day of the next month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than thirty-two (32) days after the Architect receives the Application for Payment.

Each Application for Payment shall be based upon the Schedule of Values submitted by the Contractor in accordance with the Contract Documents. Payment on Application for Payment approved by the Architect and Owner shall be made as follows: Ninety percent (90%) of the portion of the Contract Sum properly allocable to labor, materials and equipment incorporated in the work and ninety percent (90%) of the portion of the Contract Sum properly allocable upon in writing, for the period covered by the Application for Payment, less the aggregate of previous payments made by the Owner.

Upon completion of fifty percent (50%) of the Work under the Contract, for payments thereafter, ninety-five percent (95%) of the portion of the allocable Contract Sum, as set forth in this Article, shall be paid upon properly approved Application provided there is no specific cause for greater withholding arising thereafter.

Upon Substantial Completion of the entire Work, a sum sufficient to increase the total payments to ninety-five percent (95%) of the Contract Sum, less such amounts as the Architect and the Owner shall determine for all incomplete Work and unsettled claims as provided in the Contract Documents. Reduction or limitation of retainage, if any, shall comply with Pennsylvania Statute 73 PS 1625.

Payments due and unpaid under the Contract Documents shall bear interest at the rate of six percent (6%) from the date payment is due.

ARTICLE 6

FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Contract Sum shall be paid by the Owner to the Contractor when the work has been completed the Contract fully performed to the satisfaction of the Owner, and a final Certificate for Payment has been issued by the Architect, subject to all other provisions of the Contract relating hereto, including, without limitation, Paragraph 9.9 & 9.10 of the General Conditions of the Contract.

In addition to the above, the Contractor must furnish the following prior to final payment:

- a. Operation & Maintenance Manuals.
- b. As-Built Record Drawings.
- c. All Required Warranties and Guarantees.

ARTICLE 7 MISCELLANEOUS PROVISIONS

Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

The Contract Documents, which constitute the entire agreement between the Owner and the Contractor, are listed in Article 1 and, except for Modifications issued after execution of the Agreement, are shown on the attached "Table of Contents" and enumerated as follows:

Drawings and Specifications: Dated September 24, 2026

1. **Specifications: Bid Package 2 – Interior/Exterior Renovations and Upgrades at DES, NEES, VFES, TEMS, VFMS, & CHS Specifications**
2. **Drawings:** See Sheet **A001** for list of drawings.
2. **Addenda:** issued in advance of the Bid.

The Contractor shall comply with the requirements of the "Pennsylvania Prevailing Wage Act" 43 P.S. 165.1 et seq., including, but not limited to, the preparation, retention and submission of records as required by the Act.

The Contractor shall comply with the requirements of the "Pennsylvania Act 34, Act 151 and Act 114 ", requiring background checks for all personnel working on site, including personnel of subcontractors, per Section 26 of the Instructions to Bidders. The Contractor's workmen and subcontractors' workmen shall sign and submit form PDE-6004. The Contractor and Subcontractors shall conform to the requirements of the Public Works Employment Verification Act, per Pennsylvania ACT 127 and the U.S. Department of Homeland Security.

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

OWNER:
Tredyffrin/Easttown
School District

CONTRACTOR:

Signature

Arthur J. McDonnell – Business Manager
Print Name and Title

Signature

Print Name and Title

BIDDERS CHECK LIST

Bidders should check to confirm that the following items are completed and are part of each bid package being submitted to the Tredyffrin/Easttown School District. 4 Copies of each are required – one with original signatures and seals, the other may be exact copies.

Each bid package must contain:

- ☐ Form of Proposal (on PennBid)
- acknowledge all Addenda received in the appropriate space
- ☐ Bid Bond
- ☐ Non-Collusion Affidavit
- ☐ Contractor's Qualification Statement
- ☐ Read the Instructions to Bidders

SECTION 01041 – PROJECT COORDINATION MULTIPLE PRIME CONTRACTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and the general provisions of the Contract, including General and Supplementary Conditions, General Requirements and Division 1 Specification Sections, apply to the work specified in this Section.

1.2 SUMMARY

- A. This Section specified minimum administrative and supervisory requirements necessary for coordination on the Project to be collectively fulfilled by the prime Contractors including, but not limited to:
 - 1. Coordination
 - 2. Administrative and supervisory personnel.
 - 3. General installation provisions.
 - 4. Cleaning and protection.
- B. Where applicable, each prime Contractor shall participate in these coordination requirements, even though certain areas of responsibility are assigned to a specific prime Contractor, and even though the Contractor for General Construction is assigned general responsibility for overall coordination purposes.
- C. Progress meetings, coordination meetings and pre-installation conferences are covered in the job information sheet, which will be distributed to the contractors at the start of the project.
- D. Requirement for the Contractor's Construction Schedule is included in the General Requirements, Section 7 "Construction Schedule".

1.3 COORDINATION

- A. Coordination: Each prime Contractor shall coordinate its construction activities with those of other prime Contractors and other entities involved to assure efficient and orderly installation of each part of the work. Each prime Contractor shall coordinate its operations with operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
 - 1. Where installation of one part of the work is dependent on installation of other components, either before or after its own installation, each prime Contractor shall schedule its construction activities in the sequence required to obtain the best results. This will require discussions between job superintendents to formulate an approach. This approach will be discussed with the Architect ahead of installation.
 - 2. Where availability of space is limited, each prime Contractor shall coordinate installation of different components with other prime Contractors to assure maximum accessibility for required maintenance, service and repair.
 - 3. Each prime Contractor shall make adequate provisions to accommodate items scheduled for later installation.

4. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include items such as required notices, reports, and attendance at meetings.
 - a. Prepare similar memoranda for the Owner and separate Contractors where coordination of their work is required.
 - b. If the construction or installation of work or a product affects the work of another contractor, the contractors must coordinate their shop drawings to include the other contractor's work.
 - c. Contractors must provide copies of their shop drawings to other prime contractors when their work interfaces with the other prime contractors.
- B. Administrative Procedure: Each prime Contractor shall coordinate scheduling and timing of its administrative procedures with other construction activities and activities of other prime Contractors to avoid conflicts and ensure orderly progress of the work. Such administrative activities include, but are not limited to:
 1. Preparation of schedules.
 2. Installation and removal of temporary facilities.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Project Closeout activities.
- C. Scheduling inspections and tests is the responsibility of the coordinator of each prime. Special Inspections/Testing shall be furnished by the Owner, unless specifically noted otherwise, but the Contractor will be responsible to schedule such test (or inspection) and to notify the Owner in advance.
- D. Conservation: Each prime Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.4 SUBMITTALS (see also Section 01330 of these specifications)

- A. Coordination Drawings: Prepare and submit Coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
 1. Show the inter-relationship of components shown on separate shop drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements contained in Section "Submittals" of respective technical specification sections.
 4. Refer to Division 23 and 26 for specific Coordination Drawing requirements for mechanical and electrical installation.
 5. Refer to all drawings in the Contract Documents for coordination with other trades.
- B. Preparation Responsibility: Preparation of Coordination Drawings is the responsibility of the prime Contractor principally involved, where involvement by other prime Contractors is minor.
 1. Where there is substantial participation by more than one prime Contractor, including the Contractor for Mechanical Construction, the Contractor for Mechanical Construction shall prepare the coordination drawings.
 2. Where there is substantial participation by more than one prime contractor, but the Contractor for Mechanical Construction is not involved, the Architect shall designate the prime Contractor with the most involvement as responsible for preparation of Coordination drawings.
- C. Staff Names: Within 15 days of Notice to Proceed, each prime contractor shall submit a list of its

principal staff assignments, including the Superintendent and other personnel in attendance at the site at all times:

1. Post copies of the list in the project meeting room, the temporary field office, and at each temporary telephone and addresses. If no such office is to be present, submit the list to the Architect and Owner, for incorporation into a Project Directory, which shall be furnished by the Architect.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. Project Coordinator: The contractor for the General Construction shall provide a full-time Project Coordinator, experienced in administration and supervision of building construction, including mechanical, electrical, plumbing and general construction work. This shall be the on-site superintendent / foreman. The Project Coordinator shall be authorized to act as the coordinator of construction activities between the separate prime Contracts.

1. Construction activities requiring coordination by the Project coordinator include but are not limited to:
 - a. Scheduling and sequencing the work.
 - b. Sharing access to work spaces.
 - c. Installations.
 - d. Protection of each other's work.
 - e. Cutting and patching.
 - f. Preparation of Coordination Drawings.
 - g. Scheduling inspections and tests is the responsibility of the coordinator of each prime. Testing shall be furnished by the Owner, unless specifically noted otherwise, but the Contractor will be responsible to schedule such test (or inspection) and to notify the Owner in advance.
 - h. Temporary services and facilities are the responsibility of each prime.
 - i. Attendance at all construction meetings.
 - j. Coordinate all access, deliverers, laydown and stockpile areas, equipment locations and sequencing of work.

- B. Mechanical/ Plumbing/ Electrical Coordinators: The Heating, Ventilating, and Air Conditioning (HVAC) Contractor, the Plumbing contractor, and the Electrical contractor shall each provide a full-time mechanical /plumbing/ electrical coordinator, experienced in administrative and supervisory coordination of mechanical, plumbing and electrical construction. This shall be the on-site superintendent / foreman. This experience shall include coordination of the type of operations required for this Project, and coordination of mechanical/electrical construction with other types of operations.

1. The Mechanical/Plumbing/Electrical Coordinators shall be required to act as the specialized coordinator of construction activities within mechanical and electrical operations, and between those activities and activities of other separate prime contracts.
2. Construction activities requiring coordination by the Mechanical/Plumbing/Electrical Coordinator include but are not limited to:
 - a. Scheduling and sequencing of mechanical and electrical activities.
 - b. Sharing access to work spaces.
 - c. Integration of mechanical and electrical into limited spaces available for mechanical and electrical installations.
 - d. Protection of each prime Contractor's work.
 - e. Cutting and patching.
 - f. Tolerances.
 - g. Preparation of mechanical, plumbing, and electrical coordination drawings.
 - h. Inspections and tests.
 - i. Utilization of mechanical and electrical temporary services and facilities.
 - j. Attendance at all construction meetings

- C. General Contractor, Mechanical, Plumbing and Electrical Contractors must coordinate their respective work with one another. All Prime contractors must have one project supervisor who is assigned from the "office" to coordinate the work in the field and with the subcontractors. This person cannot be a contractor involved with the physical construction of the building. This person must attend each job meeting and be familiar with the work.

1.6 GENERAL CONSTRUCTION CONTRACT

- A. The General Construction Contractor shall provide all labor, material, tools, equipment, and supervision necessary to complete the work of this bid package. This work includes but is not limited to, the following:
 - 1. Scope of work identified on Architectural Drawings
 - 2. Scope of work as identified on Structural Drawings
 - 3. Scope of work identified on Site Civil Drawings
 - 4. Scope of work identified in Specifications
 - 5. Coordinate all necessary wall blocking with other primes. GC is responsible to install necessary blocking.
 - 6. Installation of access panels provided by other Prime Contractors
 - 7. This contractor will comply with all OSHA requirements pertaining to the performance of his work
 - a. The Prime contractor is responsible to submit a Project Specific Safety Manual that describes hazards associated with their scope of work and mitigation strategies for each hazard. PSSP shall be submitted 5 days prior to starting construction. Prime contractors are responsible to provide a PSSP that covers any task that will be performed by sub tier contractors. PSSP's shall include certifications, training and other special documentation that relates to their scope of work.
 - 8. This contractor is responsible for the immediate clean-up of all mud on the adjacent roads which is a result of this contractor's operations.
 - 9. Provide and maintain temporary fire extinguishers throughout construction as required.
 - 10. Pest control
 - 11. Barricades, warning signs, and lights.
 - 12. Temporary enclosure for building exterior
 - 13. Provide and install all sealants, firestop and caulking at all penetrations required in the performance of this Work and as specified in the Contract Documents. The integrity of fire, smoke and sound walls must be maintained. Sealants required at interface points between materials supplied by others and materials supplied by this Bid Package will be this Contractor's responsibility.

1.7 MECHANICAL CONSTRUCTION CONTRACT

- A. The Mechanical Contractor shall provide all labor, material, tools, equipment, and supervision necessary to complete the work of this bid package. This work includes but is not limited to, the following:
 - 1. Scope of work identified on Mechanical Drawings
 - 2. Scope of work identified in Specifications
 - 3. Refer to Specification Section 230000 for additional information.
 - 4. This Contractor is responsible for all survey engineering and layout required for work of this bid package from control lines established by the GC.
 - 5. Partial testing of systems may be required so that other Contractors can complete their work in a timely manner. These tests will be performed as directed by the Construction Manager at no additional cost to the Owner. Any additional valving and capping of lines required for this testing will be this Contractor's responsibility.
 - 6. This contractor will comply with all OSHA requirements pertaining to the performance

of his work

- a. The Prime contractor is responsible to submit a Project Specific Safety Manual that describes hazards associated with their scope of work and mitigation strategies for each hazard. PSSP shall be submitted 5 days prior to starting construction. Prime contractors are responsible to provide a PSSP that covers any task that will be performed by sub tier contractors. PSSP's shall include certifications, training and other special documentation that relates to their scope of work.
7. Provide and install all sealants, firestop and caulking at all penetrations required in the performance of this Work and as specified in the Contract Documents. The integrity of fire, smoke and sound walls must be maintained. Sealants required at interface points between materials supplied by others and materials supplied by this Bid Package will be this Contractor's responsibility.
8. Coordination with all Primes, Owner and Architect required.

1.8 PLUMBING CONSTRUCTION CONTRACT

- A. The Plumbing Contractor shall provide all labor, material, tools, equipment, and supervision necessary to complete the work of this bid package. This work includes but is not limited to, the following:
 1. Scope of work identified on Plumbing Drawing
 2. Scope of work identified on Fire Protection Drawings
 3. Scope of work identified in Specifications
 4. Refer to Specification Section 220000 for additional information
 5. This Contractor is responsible for all survey engineering and layout required for work of this bid package from control lines established by the GC.
 6. Partial testing of systems may be required so that other Contractors can complete their work in a timely manner. These tests will be performed as directed by the Construction Manager at no additional cost to the Owner. Any additional valving and capping of lines required for this testing will be this Contractor's responsibility.
 7. This contractor will comply with all OSHA requirements pertaining to the performance of his work
 - a. The Prime contractor is responsible to submit a Project Specific Safety Manual that describes hazards associated with their scope of work and mitigation strategies for each hazard. PSSP shall be submitted 5 days prior to starting construction. Prime contractors are responsible to provide a PSSP that covers any task that will be performed by sub tier contractors. PSSP's shall include certifications, training and other special documentation that relates to their scope of work.
 8. Provide and install all sealants, firestop and caulking at all penetrations required in the performance of this Work and as specified in the Contract Documents. The integrity of fire, smoke and sound walls must be maintained. Sealants required at interface points between materials supplied by others and materials supplied by this Bid Package will be this Contractor's responsibility.
 9. Coordination with all Primes, Owner and Architect required.

1.9 ELECTRICAL CONSTRUCTION CONTRACT

- A. The Electrical Contractor shall provide all labor, material, tools, equipment, and supervision necessary to complete the work of this bid package. This work includes but is not limited to, the following:
 1. Scope of work identified on Electrical Drawings
 2. Scope of work identified in Specifications
 3. Refer to Specification Section 260000 for additional information.
 4. This Contractor is responsible for all survey engineering and layout required for work of

- this bid package from control lines established by the GC.
5. Partial testing of systems may be required so that other Contractors can complete their work in a timely manner. These tests will be performed as directed by the Construction Manager at no additional cost to the Owner. Any additional valving and capping of lines required for this testing will be this Contractor's responsibility.
 6. This contractor will comply with all OSHA requirements pertaining to the performance of his work
 - a. The Prime contractor is responsible to submit a Project Specific Safety Manual that describes hazards associated with their scope of work and mitigation strategies for each hazard. PSSP shall be submitted 5 days prior to starting construction. Prime contractors are responsible to provide a PSSP that covers any task that will be performed by sub tier contractors. PSSP's shall include certifications, training and other special documentation that relates to their scope of work.
 7. Provide and install all sealants, firestop and caulking at all penetrations required in the performance of this Work and as specified in the Contract Documents. The integrity of fire, smoke and sound walls must be maintained. Sealants required at interface points between materials supplied by others and materials supplied by this Bid Package will be this Contractor's responsibility.
 8. Coordination with all Primes, Owner and Architect required.
 9. Provide, maintain, and remove when directed all necessary Temporary Power and Lighting as specified in the Contract Documents. This Contractor is responsible to coordinate this work and to provide all engineering, equipment, enclosures, pads, barricades and supports as required to provide these temporary services.

1.10 TEMPORARY FACILITIES

- A. Temporary Facilities and Controls : In addition to specific responsibilities for temporary facilities and controls indicated in other sections, Each Prime Contractor is responsible for the following:
1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.
 2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
 3. Temporary enclosures for its own construction activities.
 4. Staging and scaffolding for its own construction activities.
 5. General hoisting facilities for its own construction activities.
 6. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
 7. Progress cleaning of work areas affected by its operations on a daily basis.
 8. Secure lockup of its own tools, materials, and equipment.
 9. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: The prime Contractor involved shall require the installer of each major

component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
 - 1. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
 - 2. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
- C. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- D. Recheck measurements and dimensions, before starting each installation.
- E. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- F. Enclosure of the work: Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- G. Mount Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision. Comply with all applicable codes and authorities having jurisdiction.
- H. All contractors are to keep careful scaled and dimensioned drawings of as-built conditions.

3.2 CLEANING AND PROTECTION

- A. Each Prime Contractor shall be responsible for securing and paying for dumpsters and trash bins as required for disposal of demolition and construction debris during the project for their respective trade. However, the Contractors are encouraged to work together to limit the quantity of dumpsters required on site at any given time.
- B. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure freedom from damage or deterioration at Substantial Completion.
- C. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- D. Limiting Exposures: Each prime contractor shall supervise its construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessively high or low temperatures.
 - 4. Thermal shock.
 - 5. Excessively high or low humidity.
 - 6. Air contamination or pollution.
 - 7. Water or ice.
 - 8. Solvents.
 - 9. Chemicals.
 - 10. Light.
 - 11. Radiation.
 - 12. Puncture.
 - 13. Abrasion.
 - 14. Heavy traffic.
 - 15. Soiling, staining and corrosion.
 - 16. Bacteria.
 - 17. Rodent and insect infestation.
 - 18. Combustion.
 - 19. Electrical current.
 - 20. High speed operation.
 - 21. Improper installation, shoring, or bracing.
 - 22. Unusual wear or other misuse.
 - 23. Contact between incompatible materials.
 - 24. Destructive testing.
 - 25. Misalignment.
 - 26. Excessive weathering.
 - 27. Unprotected storage.
 - 28. Improper shipping or handling.
 - 29. Theft.
 - 30. Vandalism.
 - 31. Trash storage and pickup.
 - 32. Telecommunications.

END OF SECTION

SECTION 01330 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections:
 - 1. Division 01 Instructions to Bidders, Section 16 "Substitutions".
 - 2. Division 01 General Requirements, Section 9 "Shop Drawings, Samples and Specifications".
 - 3. Division 01 General Requirements, Section 22 "Standards of Quality".

1.3 DEFINITIONS

Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.

Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections, or on the Drawings as informational submittals.

Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in an electronic fixed-layout document format.

1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Submittal: Submit concurrently with start-up construction schedule. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action, informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.

- g. Scheduled dates for purchasing.
- h. Scheduled dates for installation.
- 5. Update: Update schedule as necessary throughout project to coincide with any major project schedule modifications.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's/Engineer's Digital Data Files: Electronic copies of the Project Drawings of the Contract Documents may be available for Contractor's use in preparing submittals. The Contractor is responsible to contact the Architect and/or Engineer to arrange for such need.
 - 1. If available, the Contractor will need to sign and submit a data licensing agreement ("release") in the form acceptable to the Architect and/or Engineer.
 - 2. A fee may be charged by the Architect and/or Engineer for the time associated with the preparation and distribution of such electronic documents.
 - 3. If so arranged, the Architect/Engineer will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and As-Built drawings.
 - a. Architect or Engineer make no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Digital Drawing Software Program: The Contract Drawings are available in AutoCAD Version 2010. If a different Version is required this can be arranged.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each "system" concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required for the same "system" as separate packages under separate transmittals.
 - 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect/Engineer will advise the Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 10 days for review of each resubmittal.
 - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 15 days for initial review of each submittal.
 - 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to the Engineer, allow 10 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
 - a. The Contractor is responsible for distribution of submittals to subcontractors and suppliers.

- D. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect/Engineer will return submittals, without review or received from sources other than Contractor.
1. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Indication of full or partial submittal.
 - i. Remarks – including any additional relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations.
- E. Electronic Submission of Submittals is preferred method of architect and owner. Paper Submission to occur only on an as needed basis.
- F. Electronic Submission - Identification and Format: If submittals are transmitted electronically, identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a **single indexed pdf file** with links enabling navigation to each item. Only submittals provided in pdf form will be accepted. Word documents and Excel Documents will not be permitted.
 2. Each electronic submittal must be organized in same format with a singular page size per pdf submission. Sheets must be at least 8-1/2 by 11 inches but no larger than 30 by 42 inches. Do not mix different page sizes within the same submitted pdf file. This is to provide easy printing if necessary for review or recordkeeping.
 3. Name the file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., HES-022000.01). A second submittal for the same Specification Section would include the next sequential number (e.g., HES-022000.01 for grass seed mixture; HES-022000.02 for topsoil). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., HES-061000.01.A).
 4. If not included on the transmittal, include the following information on an inserted page immediately following the transmittal:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Contractor.
 - e. Names of subcontractor, supplier and/or manufacturer.
 - f. Number and title of appropriate Specification Section.
 - g. Submittal Number (to match file name, see 3.a above)
 - h. Drawing number and detail references, as appropriate.
 - i. Location(s) where product is to be installed, as appropriate.
 - j. Related physical samples submitted directly.
 - k. Other necessary identification.
 5. The submission shall be reviewed by the Contractor prior to submission. The submitted materials shall conform to measurements at the site, the requirements of the Contract Documents and of all trades whose work must be coordinated with that shown on the Drawings. Submittal must include evidence of Contractor's review of the electronic submittal and shall bear the Contractor's stamp of approval, be dated and initialed. Documents that have been forwarded without review will be returned.

6. Email Distribution: Distribution of electronic submissions shall be done as follows:
 - a. Email must be sent directly to the Architect. The Architect will forward to necessary engineers or consultants for review. Architect's e-mail contact to be furnished to successful bidder.
 - b. Any additional persons whom should be notified of the submittal or reviewing the submittal concurrently may be copied (CC'd) on the same email.
 - c. The subject line should start with the submittal number and send only one submission per email. This format will improve digital storage and retrieval of submittals.
 7. Paper copies of all processed shop drawings and other submittals are to be available on site in the Contractor's field office for review during construction.
 8. The allowance of electronic submissions will be conditioned on the above being performed by the Contractor. If these requirements are not met, the Architect reserves the right to require paper copies for all submittals.
- F. Paper Submission - Identification and Format: Identify and incorporate information in each paper submittal as follows:
1. Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.
 2. On a submittal cover sheet or on the first page of the submittal, include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Name of subcontractor.
 - f. Name of manufacturer.
 - g. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). A second submittal for the same Specification Section would include the next sequential number (e.g., HES-022000.01 for grass seed mixture; HES-022000.02 for topsoil). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
 - j. Location(s) where product is to be installed, as appropriate.
 3. The submission shall be reviewed by the Contractor prior to submission. The submitted materials shall conform to measurements at the site, the requirements of the Contract Documents and of all trades whose work must be coordinated with that shown on the Drawings. Submittal must include evidence of Contractor's review of the electronic submittal and shall bear the Contractor's stamp of approval, be dated and initialed. Documents that have been forwarded without review will be returned.
 4. Multiple Copies: Multiple copies of the submittal must be provided by the Contractor. Number of copies will be reviewed at the first job meeting. Generally, this would be such that the Architect, Engineer and the Owner can each retain one copy, plus the number required by the Contractor for record keeping and distribution to subcontractors and suppliers.
 - a. The Architect will make distribution of reviewed submittals to the Owner. The Contractor is responsible for distribution of reviewed submittals to subcontractors, manufacturers and suppliers.
 - b. Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 - c. The Architect or Consulting Reviewer will not be responsible for producing additional copies of paper submissions.

- G. Options: Identify options requiring selection by the Architect.
- H. Deviations: Identify deviations from the Contract Documents on submittals. **Any changes from the Contract Documents shall be noted and highlighted.**
- I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- K. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL REQUIREMENTS

- A. See the individual Technical Specification sections within this specification book for detail listings of each item that is to be submitted.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts, or if so specified, provide material samples for color selection.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based upon Architect's digital data drawing files is otherwise permitted.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.

- c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
 3. Submit Shop Drawings as a PDF electronic file or multiple paper copies.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Process with a transmittal and provide the sample with a unique submittal number, in the same format as a shop drawing or product data.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, will return submittal with options selected, but will retain the material sample.
- E. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- F. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- G. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- H. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- I. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- J. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect/Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents. Contractor must sign and/or initial each approval stamp.

END OF SECTION

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Quality assurance requirements.
2. Quality control requirements.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager Agent, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.2 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Contractor's quality-control personnel.

- B. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
 - 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.

1.4 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.

- B. Manufacturer's Field Service Reports: Prepare written information documenting manufacturer's technical or factory-authorized representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
1. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of **five** previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - d. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.
 - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, through Construction Manager Agent, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect or Construction Manager Agent.
2. Notify Architect and Construction Manager Agent seven days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect's and Construction Manager Agent's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed unless otherwise specified to remain as part of complete Work.

1.6 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Do not employ same entity engaged by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including

service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect, Construction Manager Agent, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect, Construction Manager Agent, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 - 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Delivery of samples to testing agencies.
 - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, Construction Manager Agent, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.7 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

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

3.2 REPAIR AND PROTECTION

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

END OF SECTION

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

1.2 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

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

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

- B. Submittals Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
 4. Submit test/adjust/balance records.
 5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of [**10**] days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Advise Owner of changeover in heat and other utilities.
 6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 8. Complete final cleaning requirements, including touchup painting.
 9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager Agent will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - a. When more than one reinspection is required, pay for Architect's time to complete additional reinspections.
2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
 1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager Agent will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - a. When more than one reinspection is required, pay for Architect's time to complete additional reinspections.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A or other Architect approved form.
 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:

- a. Project name.
 - b. Date.
 - c. Name of Architect and Construction Manager Agent.
 - d. Name of Contractor.
 - e. Page number.
4. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Architect, through Construction Manager Agent, will return annotated file.

1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within [15] days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.

- o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

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

END OF SECTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.

1.2 MATERIALS OWNERSHIP

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

1.3 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.

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

1.4 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection , for dust control and , for noise control. Indicate proposed locations and construction of barriers.

- B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

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- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Predemolition Photographs or Video: Submit before Work begins.
- E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.5 CLOSEOUT SUBMITTALS

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

1.6 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, coordinate with Owner for Owner removal of items prior to commencement of demolition Work.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

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1.7 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- F. Survey of Existing Conditions: Record existing conditions by use of measured drawings preconstruction photographs preconstruction videotapes and templates.

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3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

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1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Doors: Where existing doors interface with new construction, leave existing doors in place until the latest possible time in the project, and after new construction is weather tight and does not produce odors and debris that would migrate through the existing doors, if removed.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

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3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

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

END OF SECTION

030130 – CONCRETE REHABILITATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide all labor, superintendence, materials, tools, equipment, transportation, and all means of construction necessary to complete all concrete rehabilitation work as shown on the Contract Drawings, described in the Project Specification and as necessary to complete the Contract.
- B. The scope of work includes, but is not necessarily limited to, the following:
 - 1. Repair deteriorated concrete or deteriorated prior repairs.
- C. Unit prices for concrete rehabilitation work are specified as required on the “Bid Form”.
 - 1. Unit prices will apply to authorized work covered by quantity allowances and as the basis for computing “Additions” and “Deductions” to the contact amount for extra work and for reductions in quantities included in the Contract Documents. Unit prices shall remain binding and irrevocable for the entire contract period.
 - 2. Unit prices shall include all costs by the Contractor, Subcontractors, Suppliers for the work, including labor, material, tools, equipment, insurance, taxes, overhead and profit and bond. The work shall include all incidental items required to complete the work.

1.02 RELATED WORK

- A. Section 07 9200: *Joint Sealants*
- B. Section 09 9113: *Exterior Painting*

1.03 REFERENCE STANDARDS

- A. American Concrete Institute (ACI)
 - 1. ACI 301: Specifications for Structural Concrete
 - 2. ACI 305: Hot Weather Concreting
 - 3. ACI 306: Cold Weather Concreting
 - 4. ACI 308: Standard Practice for Curing Concrete
 - 5. ACI 318: Building Code Requirements for Structural Concrete
 - 6. ACI 347: Guide to Formwork for Concrete
 - 7. ACI 503.4: Standard Specification for Repairing Concrete with Epoxy Mortars
 - 8. ACI 546R: Concrete Repair Guide
 - 9. ACI 546.3R: Guide for the Selection of Materials for the Repair of Concrete.
 - 10. ACI 562: Evaluation Repair and Rehabilitation of Existing Buildings
- B. American Society for Testing and Materials (ASTM)
 - 1. Refer to ACI 546, “Concrete Repair Guide,” for a complete listing of applicable American Society for Testing and Materials Standards and Reports.
- C. International Concrete Repair Institute (ICRI)

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1. Guideline 130.1R – Guide for Methods of Measurement and Contract Types for Concrete Repair Work.
2. Guideline 310.1R: Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion.
3. Guideline 320.1R: Guide for Selecting Application Methods for the Repair of Concrete Surfaces.
4. Guideline 320.2R: Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces.

D. Concrete Reinforcing Steel Institute (CRSI)

1. CRSI 63: Recommended Practice for Placing Reinforcing Bars.
2. CRSI 65: Recommended Practice for Placing Bar Supports, Specifications and Nomenclature.

1.04 QUALITY ASSURANCE

- A. All work with special proprietary products shall be done in strict accordance with the manufacturer's instructions and recommendations.
- B. The Contractor shall be a specialty company fully equipped to perform concrete rehabilitation work and be familiar with good construction practices.
 1. Field Supervision: The Contractor shall maintain an experienced full-time supervisor on the project site during any times when concrete rehabilitation work is being performed. DO NOT change Field Supervisors during the project except for causes beyond the control of the Contractor.
- C. The Contractor must have a minimum of **Five (5) years** successful experience in comparable concrete rehabilitation projects and employing personnel skilled in the rehabilitation process and operations indicated. The Engineer & Owner shall be provided with a list of comparable projects similar in magnitude and utilizing similar products dating back **Five (5) years**. The list shall include references from property Owners, Property Managers, Contractors and Design Professionals on previous projects.
 1. The Contractor shall employ skilled journeymen who are familiar and experienced with the materials and methods specified and are familiar with the design requirements used in concrete rehabilitation work.
 2. Submit a resume for the Foreman demonstrating experience with previous projects of similar size and complexity. The documentation shall include references from Owners, Property Managers, Contractors and Design Professionals on previous projects.
- D. The Contractor shall be trained and certified by the manufacturer on the proper use and application of all products. Only skilled, qualified manufacturer's trained personnel shall be present during the execution of the work. The Contractor must include any costs of the Manufacturer's training and certification in the Contract Base Bid.
- E. Testing Data: All test data submitted by the Contractor must be data generated by an independent testing laboratory. Product tests must be totally controlled by said testing laboratory; specimens cannot be pretreated by the manufacturer.

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1.05 GENERAL REQUIREMENTS

- A. Perform concrete rehabilitation work in accordance with ACI 546, “Concrete Repair Guide”, unless specified otherwise.
- B. Perform concrete reinforcing work in accordance with CRSI 63 & 65, unless specified otherwise in this Section.
- C. Construct and erect concrete formwork in accordance with ACI 318 & 347 and applicable construction safety regulations for place of work.
- D. All concrete surface preparation shall conform to the requirements of ICRI Guideline 310.1R “Guide for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion”
- E. All repair mortars shall conform to the minimum requirements as stated in ICRI Guideline 320.2R, “Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces”

1.06 SUBMITTALS

- A. Provide submittals in accordance with the provisions of Section 01 3300 “Submittal Procedures”.
- B. Product Data: Submit manufacturer’s product data, technical literature and detailed application instructions for all products. Include test reports and certifications substantiating products comply with requirements.
- C. Material Safety Data Sheets (MSDS): Submit manufacturer’s MSDS sheets for all components of the work.
- D. Contractor Qualification Statement: Submit written qualification statement for the concrete repair Contractor and the Foreman documenting company and key personnel experience in conformance with the Quality Assurance requirement stated in this specification section.
- E. Contractor Certificate: Submit certificate from the material manufacturer stating all installers of repair materials have successfully completed the manufacturer’s training program and are ‘Approved Installers’.
- F. Field Mockup Samples: Prior to performing concrete rehabilitation, the Contractor shall prepare a minimum of four (4) sample repair areas to be used as a quality standard for the work of this Section. Locations of field mockups will be determined at the building site. Prepare mockup samples to comply with the following requirements, using materials indicated for final use in the work.
 - 1. Concrete preparation: Prepare a minimum one (1) foot high by one (1) foot long repair mockup of each concrete repair type demonstrating acceptable concrete preparation, repair depth, edge treatment and reinforcement preparation.
 - 2. Repair mortar application: Prepare minimum one (1) square foot samples of each concrete repair type demonstrating methods and quality of workmanship expected in the repair work. Prepare samples to match adjacent concrete finishes.
 - 3. Samples of each concrete repair type shall be performed in situ within the work area. Allow samples to cure at least 72 hours before obtaining review and acceptance of samples.

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4. Mockup samples accepted by the Owner, Architect and Engineer shall serve as a quality standard for all other similar work on the building. Contractor to retain sample panels during construction in an undisturbed condition.
 - a. Acceptance of mockup sample does not constitute acceptance of deviations from the Contract Documents, unless such deviations are specifically accepted by the Owner and Engineer in writing.
 - b. When directed, demolish, and remove sample panels and complete repairs in those areas.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Deliver materials to the jobsite in original sealed, undamaged containers with labels intact and legible indicating material name, date of manufacture, expiration date and lot number.
- B. Storage of Materials:
 1. Store materials in a protected dry and well-ventilated area. Store materials out of direct sunlight and in original packaging. Store all materials at temperatures of 50°F and above to facilitate handling.
 2. Materials stored outside must be raised above ground or floor level on pallets and covered with a waterproof material. Plastic wrapping installed at the factory **must not** be used as outside storage covers.
 3. Store all cementitious materials to prevent deterioration or damage due to moisture or temperature. **DO NOT** use materials which have become deteriorated or damaged.
 4. Store all aggregate materials in accordance with manufacturer's requirements to prevent segregation and contamination of aggregate materials.
 5. Store all materials in accordance with MSDS and in compliance with local fire authority and safety requirements. After partial use of materials replace lids promptly and tightly to prevent contamination.
 6. All flammable materials must be stored in a cool, dry area away from open flames or excessive heat. Follow precautions outlined on container or supplied by material manufacturer or supplier.
- C. Handling of Materials: Handle and protect materials prior to and during installation in strict accordance with manufacturer's requirements and recommendations. **DO NOT** use materials which have been damaged. Damaged materials shall be replaced at the Contractor's expense.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. All concrete repair materials must be applied in strict accordance with manufacturer's specifications and recommendations regarding safety and weather conditions.
- B. Do not apply concrete repair materials during rainy or inclement weather and on frost or wet covered surfaces. **DO NOT** commence application until environmental conditions are suitable for the application of the materials.
- C. Protect repair materials from rain, high wind or premature drying conditions for a minimum of 24 hours after application. During the protection and curing period, no part of the repair material may be allowed to become dry. Provide suitable protection and curing methods as required.

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- D. Cold Weather Requirements: Do not work in temperatures below 40°F, when the substrate is colder than 45°F, or when the temperature is expected to fall below 45°F for 48 hours after installation of repair materials. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the material manufacturer. Remove work exposed to lower temperatures as directed by the Owner or his agent.
 - 1. The Contractor shall not proceed with any cold weather work until notified in writing to proceed by the Owner or his agent.
- E. Hot Weather Requirements: Protect repair materials from direct sunlight and wind using protection measures submitted and approved when the ambient air temperature exceeds 75°F. Do not use or prepare mortar when substrate or ambient air temperature is above 90°F at the location of the work.
- F. Use all means necessary to protect the materials of this section before, during and after installation and to protect the work and material of other trades, the building and the public.

1.10 CONCRETE REPAIR QUANTITY DOCUMENTATION

- A. The Contractor shall be responsible for keeping a marked up as-built drawing record of the types, locations and quantity of repairs throughout the Project. This information will be made available to the Engineer for review and will be used as the basis for actual field work versus the bid quantities.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Select appropriate means and methods of concrete removal, cleaning of reinforcement and preparation of the concrete substrate as defined in these specifications. The following equipment and/or equivalent are permitted to be used.
 - 1. Chipping hammers shall be hand-held type utilizing proper chisels and blades required to sufficient remove unsound, deteriorated concrete substrate from partial-depth repairs, beneath reinforcing bars are around repair edges. Maximum hammer weight is 15 lb.
 - 2. Dry abrasive blast cleaning equipment capable of removing rust from the exposed steel reinforcement and cleaning the surface of the exposed concrete substrate. Cleaning shall include the removal of damaged paste and aggregate.
 - 3. Pressure washing equipment capable of delivering at least 3,000 psi nozzle pressure for cleaning loose material from repair areas.
 - 4. Compressed air equipment capable of delivering compressed air free of oil for cleaning loose material from repair areas.
 - 5. Adjustable depth concrete saw for saw cutting the edges of repair areas shall be hand-held type utilizing diamond or carbide tipped blades.
- B. Select appropriate means and methods for placement of concrete repair materials.

2.02 FORMWORK

- A. Formwork shall conform with requirements of ACI 301 & 347.
- B. Wood: Spruce species, construction grade with grade stamp clearly visible. Free from loose knots and suitable to facilitate finishing concrete surfaces; tongue and grooved.

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- C. Plywood: Sound undamaged sheets, PS-1 Exterior Grade B-B (concrete form), 5/8 inch or 3/4 inch thick for unlined contact form.
- D. Form Lining: Hardboard ANSI A208.1, Type 2, Grade 2-M-2 not less than 3/16 inch thick or Plywood, Grade B-B Exterior (concrete form) not less than 1/4 inch thick.
- E. Form Release Agent: Commercially formulated form release agent that will not bond with , stain or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- F. Chamfer Strips: Wood or PVC; match existing concrete profile.

2.03 MORTAR REPAIR SYSTEM

- A. Available Products: Subject to compliance with requirements, Manufacturers' products that may be incorporated into the Work include, but are not necessarily limited to, the following specified products. Comparable manufacturers' products may be incorporated into the work:
- B. Horizontal Repair: One component, polymer modified, self-consolidating, cementitious based repair mortar with integral corrosion inhibitor.
 - 1. SikaCrete 211 SCC Plus, as manufactured by Sika Corporation, Lyndhurst, NJ.
 - 2. Planitop 11 SCC, as manufactured by Mapei Corporation, Deerfield Beach, FL
 - 3. Acceptable Equivalent.
- D. Vertical, Edge, or Overhead Repair: Two component, polymer modified, portland cement based, non-sag repair mortar with integral corrosion inhibitor.
 - 1. SikaTop 123 Plus, as manufactured by Sika Corporation, Lyndhurst, NJ.
 - 2. Planitop 23, as manufactured by Mapei Corporation, Deerfield Beach, FL.
 - 3. Acceptable Equivalent.
- E. Crack Repair (Routed cracks greater than 1/16 inch wide): Use specified concrete repair mortars or other acceptable materials recommended by material manufacturer.
- F. Reinforcing Steel Primer: Anti-corrosion primer for steel shall be VOC compatible:
 - 1. Sika Armatec 110 EpoCem, as manufactured by Sika Corporation, Lyndhurst, NJ.
 - 2. Planibond 3C, as manufactured by Mapei Corporation, Deerfield Beach, FL.
 - 3. Acceptable Equivalent.

2.04 WATER

- A. Mixing water shall be fresh, clean and potable, free of oil, acid, injurious amounts of organic matter, alkalis or other salts.

PART 3 - EXECUTION

3.01 PRE-INSTALLATION MEETING

- A. Convene a pre-construction meeting at the jobsite at least one (1) week prior to the start of concrete rehabilitation work. The Contractor, Installer and Material Manufacturer's

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Representative, at the very minimum, shall be at this meeting. Review mockup samples, substrate preparation, application, curing and protection procedures along with coordination and scheduling required with related work.

- B. Contractor shall prepare a typed copy of meeting minutes and forward to all attendees and the Owner and Engineer.

3.02 INSPECTION & PROTECTION

- A. Protect pedestrians, motor vehicles, mechanical, electrical and plumbing equipment, surrounding construction, landscaping and surrounding building from damage or injury resulting from concrete rehabilitation work.
 - 1. Neutralize and collect alkaline and acid wastes from proper disposal off-site in accordance with Local, State and Federal regulations.
 - 2. Dispose of runoff from wet operations in accordance with local ordinances and in a manner that prevents soil erosion, undermining of paving, foundations, damage to landscaping and water penetration into building interiors.
 - 3. Comply with local noise and dust ordinance requirements during demolition operations.
 - 4. Protect all new repair work from vibration, dust and any deleterious environmental effects during the work. Provide adequate cure time from concrete repairs to allow for compressive and bond strength gain prior to performing demolition adjacent to repairs.
- B. The Contractor shall verify that all substrates and site conditions are satisfactory for the installation of concrete repair materials. **DO NOT** proceed with installation until unsatisfactory conditions are corrected. Should any deficiencies exist, the Engineer and Owner shall be notified in writing and corrections made. Start of application indicates Contractor's acceptance of substrate and site conditions.
- C. Prior to commencing material application, an Authorized Manufacturer's Representative shall inspect jobsite conditions and immediately report his findings to the Contractor, Owner and Engineer. Report all surface preparation deficiencies with required corrections.

3.03 FORMWORK

- A. The design and engineering of the formwork, as well as its construction, shall be the responsibility of the Contractor. Contractor shall construct formwork to match existing façade pattern and joints.
- B. Formwork and associated falsework shall be rigid, substantial and unyielding. Form surfaces shall be smooth and free of holes, dents, sags and irregularities.
- C. Design formwork to be readily removed without prying, impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- D. Formwork shall be constructed so the finished repair conforms to the existing building dimensions and contours.
- E. Formwork must be sufficiently tight at all joints to prevent leakage.
- F. Thoroughly clean forms and adjacent surfaces to receive repair materials. Remove chips, wood, sawdust, dirt and other debris prior to placing concrete.

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- G. Coat contact surfaces of formwork with suitable form-release agent to facilitate the removal of forms in accordance with manufacturer's written instructions.
- H. Provide ports through slabs to vent air during concrete placement at slab soffit and beam soffit repair locations. Completely fill port holes with repair materials.
- I. Provide ports through the side of forms where required to install repair materials. Remove and patch ports immediately after removal of forms.

3.04 SURFACE PREPARATION, GENERAL

- A. Locate areas of delamination or deterioration using hammer sounding and/or chain-drag sounding techniques in accordance with ASTM D4580. Mark boundaries of repair areas and arrange for Engineer to review repair locations and preparation prior to application of repair materials.
- B. All demolition and removals shall be performed in accordance with ACI 546R "Concrete Repair Guide" and ICRI Guideline 310.1R "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion".
- C. Repair area configurations shall be kept as simple as possible, i.e. square, rectangular shape, with square corners in conformance with ICRI Guideline 310.1R. Reentrant corners shall be avoided. If they cannot be avoided, reentrant corners shall be mitered or reinforced to limit cracking at these locations.
- D. Completed surface preparation shall yield a clean substrate surface, having complete exposure of sound original material without any deposits of contaminants, foreign matter or loose material which can affect the bond or durability of rehabilitation work.

3.05 SURFACE PREPARATION

- A. All unsound, deteriorated concrete identified on the Contract Drawings or in the field shall be removed. All concrete shall be removed until uncorroded reinforcing steel is found and where the bar is well bonded to surrounding concrete. A minimum $\frac{3}{4}$ inch clearance shall be provided between exposed reinforcing bars and surrounding concrete.
- B. Do not damage sound, bonded concrete surrounding uncorroded reinforcing steel exposed during removals. Where half or more of the reinforcing steel is exposed or the bond between the reinforcing and surrounding concrete is broken, undercut and remove concrete from the entire perimeter of the bar to provide a minimum $\frac{3}{4}$ inch clearance around the reinforcing.
- C. Chipping shall be done in such a manner that the roughness of the finished surface achieves a minimum surface profile of CSP7 and does not exceed $\frac{3}{4}$ inch full amplitude.
- D. At edge locations, provide right angle sawcuts to the concrete surface. The existing reinforcing shall not be cut. **Corners shall not be over-cut.** The cut on the saw side shall be made just to the corner. The corner on the opposite face may be sawed or chipped out from that face. Feather edge conditions are **not permitted**.
- E. After initial removals, the repair area shall be air blasted to remove any dust and/or loose particles. Hammer sound substrate surfaces to locate any remaining delamination or deterioration conditions. Remove additional concrete until unsound concrete is completely removed. Remove bruised or microcracked substrate surfaces by abrasive blasting or high-pressure water blasting with or without abrasive.

- F. All exposed reinforcing bars shall be cleaned by oil-free abrasive blasting to achieve a bare metal finish. Remove concrete fragments, corrosion byproduct, mill scale and other contaminants.
 - 1. Contractor shall supply and install additional reinforcing steel when the existing reinforcing steel has a section loss of 25% or greater, as directed by the Engineer. Lap and secure supplemental reinforcing to existing reinforcing steel. Remove additional concrete as necessary to provide at least 3/4 inch clearance beyond the existing and replacement or supplemental reinforcing.
 - 2. Apply corrosion inhibitive primer to all exposed reinforcing steel surfaces. The primer coating must be continuous on all steel surfaces. Special attention must be made to prime the back side of the bar. Allow for curing of primer material prior to application of repair materials in conformance with the manufacturer's specifications.
- G. After completed removals, the repair area shall be air or low-pressure water blasted to remove any dust and/or loose particles. All concrete substrate surfaces on which new materials are to be bonded must be free of all dirt, debris, oil, laitance and foreign materials.
- H. All concrete surfaces on which new materials are to be bonded must be free of all dirt, debris, oil, laitance and foreign materials by abrasive blasting or water blasting.
 - 1. Following cleaning, inspect the concrete substrate surface to ensure the surface is free of additional cracks, loose materials or additional deterioration. **DO NOT** proceed with work until all unsatisfactory conditions are corrected.
 - 2. No water with concrete dust shall be allowed to remain on any surface following washing and must be immediately removed prior to drying and re-hardening.
- I. Following surface preparation, the Contractor shall maintain work area in a clean condition. Cover the prepared repair areas with 6 mil polyethylene film until repair material is ready to be placed.
- J. All surface preparation must be reviewed and accepted by the Engineer prior to any formwork or application of repair materials. The Engineer's review does not relieve the Contractor from performing their own quality control inspections and performing the work in a proper manner.

3.06 APPLICATION (GENERAL)

- A. All work with special proprietary products shall be done in strict accordance with the manufacturer's instructions and recommendations and as amended by this Specification Section.
- B. Application of concrete repair materials must be performed in strict conformance with manufacturer's specifications and as amended by this Specification. Special attention must be made to temperature requirements and substrate preparation.
- C. Mix and prepare repair materials in strict accordance with manufacturer's requirements. Adjust water content according to the environmental conditions and substrate porosity as recommended by the manufacturer.
- D. Extend repair materials with clean, washed, graded aggregate as recommended by the manufacturer where repair thickness exceeds stated maximum requirements. The mix ratio, type and gradation of aggregate must be in strict accordance with the manufacturer's specifications.

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- E. Place repair materials in strict accordance with manufacturer's requirements. Place materials within open time of any mortar scrub coat, reinforcing primer or bonding agent. Fully consolidate repair materials ensuring no voids occur within each repair area.

3.07 APPLICATION, HAND TOOL METHOD

- A. All substrate surfaces must be saturated surface dry (SSD) prior to the application of repair materials. **DO NOT** apply materials to a dry substrate surface.
- B. Prime and prepare substrate including all edges with a slurry coat of repair materials. Work the slurry into the substrate to ensure intimate contact and establish bond. **DO NOT** allow slurry coat to dry out before placing repair materials.
- C. Apply the repair materials using hand tools to place and consolidate materials into the repair area ensuring no voids occur within repair. Apply materials in strict conformance with manufacturer's minimum/maximum thickness requirements.
- D. If repair materials are applied in multiple layers, roughen each layer and allow materials to cure between subsequent layers. Prepare and dampen materials before application of additional layers to ensure proper bond is maintained between layers.
- E. Build up repair material so it projects slightly above the adjacent finished surface. Allow materials to set and scrape off excess materials to achieve required finishes. Consult with manufacturer about set time and duration prior to shaving materials.
- F. Repair materials shall be finished to a uniform surface texture by trowel or float finishing. Repeat passes and restraighten until surface is left with a uniform surface texture. DO NOT wet materials or overwork the surface during finishing.

3.08 APPLICATION, FORM AND POUR METHOD

- A. Install rigid formwork at each repair location. Formwork must be tight at all joints to prevent leaks and loss of water and material. Use suitable form-release agent to facilitate the removal of forms from the cast material.
- B. Formwork shall include vent holes at bottom to allow pre-soaking water to drain and at top to allow air to escape during placement. Refer to ACI 347 "Guide to Formwork for Concrete".
- C. Before placing any concrete, verify that installation of formwork, reinforcement and embedded items is complete, and all required inspections have been performed.
- D. Fill forms with water several hours prior to placing repair materials. Immediately prior to material placement, completely drain water and seal drainage outlets. All substrate surfaces must be saturated surface dry (SSD) prior to the application of repair materials. **DO NOT** apply materials to a dry substrate surface.
- E. After mixing, place and deposit repair materials into the formed area. Fill forms with a continuous feed. **DO NOT** interrupt filling once started.
- F. Consolidate placed repair materials in formed area in strict accordance with manufacturer's requirements. **DO NOT** use vibrators to transport materials inside forms.

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- G. Formwork that does not support weight of repair materials may be removed 24 hours after placing materials. Repair material must attain sufficient strength to not be damaged by form-removal operation.

3.09 CURING

- A. Protect freshly placed repair materials from premature drying, excessive cold or hot temperatures and mechanical injury. All repair materials shall be moist cured following placement and finishing.
- B. Cure repair materials for a minimum of 48 hours and a maximum of 72 hours following placement. Repair materials shall be cured in strict accordance with manufacturer's written instructions and recommendations. During the curing period, no part of the repair material may be allowed to become dry.
- C. Curing of formed surfaces must start immediately after removal of formwork.
- D. Mist the repair with water to wet the entire surface within 30 minutes after completion. Continue periodically wetting repair materials throughout the curing period to maintain a moist condition.
- E. If repair is inaccessible, a temporary polyethylene cover may be placed over repair to retain moisture. Do not allow cover to contact material.
- F. Protect repair materials from direct sunlight, wind, rain and frost during the curing period.

3.11 DEFECTIVE CONCRETE REPAIR MATERIALS

- A. All concrete repair mortar shall be tested in accordance with the procedures stated in this Specification. If adhesion failure or low compressive strength is observed, the concrete repairs shall be considered defective work and shall be removed and replaced at no additional cost to the Owner.
- B. All completed concrete repairs shall be sounded with a non-marking mallet or hammer. Concrete repairs exhibiting cracks or bond failure shall be considered defective work and shall be removed and replaced at no additional cost to the Owner.
- C. Evidence of improper curing or finishes shall be considered defective work and shall be removed and replaced at no additional cost to the Owner.

3.12 CRACK INJECTION REPAIR

- A. Mix epoxy components in accordance with manufacturer's instructions.
- B. Install ports in crack at spacing recommended by manufacturer. Temporarily seal crack with appropriate paste epoxy. Allow to cure.
- C. Perform injection working from the bottom up. Inject epoxy into the first port, until it will no longer flow into the crack. Continue working upward until all ports are full.
- D. Remove paste from crack surface and remove injection ports. Rout and seal crack.

3.13 CLEANUP AND PROTECTION

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- A. Promptly as the work proceeds and on completion, clean up and remove from the premises all rubbish and surplus materials resulting from the work.
- B. Clean all soiled surfaces, spatters, and damage caused by work of this Section to the satisfaction of the Engineer and Owner.
- C. Protect concrete repairs and all components from damage during construction. **DO NOT** permit walking upon or over concrete until it has set for a sufficient length of time. All concrete that will be permanently exposed in the finished work shall be protected from injury by the falling of tools, mortar or other objects until the final acceptance of the work
- D. Repair any damages to concrete repairs in accordance with the Manufacturer's requirements to the satisfaction of the Engineer and Owner.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Requirements:
 - 1. Section 312000 "Earth Moving" for drainage fill under slabs-on-grade.
 - 2. Section 321313 "Concrete Paving" for concrete walks and curbs.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete Subcontractor.

Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures,

curing procedures, construction and isolation joints, shoring and reshoring procedures, anchor rod and anchorage device installation tolerances, steel reinforcement installation, methods for achieving specified floor and slab flatness and levelness and concrete protection.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Engineer.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Curing compounds.
 - 6. Bonding agents.
 - 7. Adhesives.
 - 8. Vapor retarders.
- C. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.
 - 1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.
- D. Surface flatness and levelness measurements indicating compliance with specified tolerances.

- E. Field quality-control reports.
- F. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

1.8 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.10 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
- C. Wet-Weather Placement: Comply with ACI 301 and as follows:
1. Do not place concrete within 8 hours of forecasted rain.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 301.
 2. ACI 117.
- B. ADA Requirements: Concrete sidewalks, slabs and curb ramps to comply with ADA Standards for Accessible Design as indicated on the Drawings. Work that does not comply with ADA Standards is non-conforming. Non-conforming work must be corrected.

2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Plywood, metal, or other approved panel materials.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

- E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

- 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2.3 STEEL REINFORCEMENT

- A. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M, epoxy coated, Grade 60 deformed bars with less than 2 percent damaged coating in each 12-inch bar length.
- B. Epoxy-Coated Welded-Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, plain steel.

2.4 REINFORCEMENT ACCESSORIES

- A. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.
- B. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.5 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, Type I.
 - 2. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
- C. Normal-Weight Aggregates: ASTM C 33/C 33M, coarse aggregate, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
 - 1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Water: ASTM C 94/C 94M and potable.

2.6 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

2.7 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.
- B. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

2.8 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - 1. Slag Cement: 50 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.9 CONCRETE MIXTURES

- A. Proportion mixtures to provide normal-weight concrete with the following properties:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.45.
 - 3. Slump Limit: 3 inches, plus or minus 1 inch.
 - 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.

2.10 FABRICATING REINFORCEMENT

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

2.11 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

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

- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Construct forms tight enough to prevent loss of concrete mortar.
- D. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Do not use rust-stained steel form-facing material.
- E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- F. Chamfer exterior corners and edges of permanently exposed concrete.
- G. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- I. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- J. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
- B. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORING AND RESHORING INSTALLATION

- A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

3.5 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D3963/D3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

3.6 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Sealants: See Section 321373 "Concrete Paving Joint Sealants" for concrete joint sealants.
- C. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of slabs.
 - 2. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- D. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- E. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- F. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 CONCRETE PLACEMENT

- A. Comply with ACI 301 requirements for concrete placement. Do not drop concrete more than 2 feet during placement.
- B. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 4. Slope surfaces uniformly to drains where required.
 - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.8 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 FINISHING SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.10 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection, ACI 305.1 for hot-weather protection, and ACI 301 for wet-weather protection during curing.

- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

3.11 CONCRETE SURFACE REPAIRS

- A. Concrete repairs to comply with ACI 301.
- B. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.
- C. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

- D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.
- E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - 2. After concrete has cured at least 14 days, correct high areas by grinding.
 - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 - 4. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- F. Repair materials and installation not specified above may be used, subject to Engineer's approval.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- B. Inspections:

1. Steel reinforcement placement.
 2. Verification of use of required design mixture.
 3. Concrete placement, including conveying and depositing.
 4. Curing procedures and maintenance of curing temperature.
 5. Verification of concrete strength before removal of shores and forms from beams and slabs.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 5. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 6. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 9. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

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10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 033000

040100 – MASONRY REHABILITATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide all labor, superintendence, materials, tools, equipment, transportation and all means of construction necessary to complete the work, as indicated on the Contract Drawings, described in the Project Specification, and as necessary to complete the Contract.
- B. The scope of work includes, but is not necessarily limited to, to following:
 - 1. Select rebuilding of brick masonry.
 - 2. Select repointing of brick masonry.
 - 3. Select patch repairs of cast stone masonry.
 - 4. Provide all dowels, anchors and masonry accessories.
 - 5. Remove all abandoned miscellaneous anchors and fasteners from masonry and patching holes.
 - 6. Select repointing of brick masonry and coping stones.
 - 7. Clean masonry surfaces following repairs.
- C. Unit prices for masonry rehabilitation work are specified in Division 1 Section “Unit Prices” and as required on the “Bid Form”.
 - 1. Units prices will apply to authorized work covered by quantity allowances and as the basis for computing “Additions” and “Deductions” to the contact amount for extra work and for reductions in quantities included in the Contract Documents. Unit prices shall remain binding and irrevocable for the entire contract period.
 - 2. Unit prices shall include all costs by the Contractor, Subcontractors, Suppliers for the work, including labor, material, tools, equipment, insurance, taxes, overhead and profit and bond. The work shall include all incidental items required to complete the work.

1.02 RELATED WORK

- A. Section 07 9200: *Joint Sealants*

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1.03 REFERENCE STANDARDS

- A. The Brick Institute of America (BIA)
 - 1. Technical Notes on Brick Construction
- B. The National Concrete Masonry Association (NCMA)
 - 1. TEK Manual for Concrete Masonry Design and Construction
- C. American Concrete Institute (ACI)
 - 1. ACI 530 – Building Code Requirements for Masonry Structures
 - 2. ACI 530.1 – Specifications for Masonry Structures.
- D. The American Society for Testing Materials (ASTM)

1.04 QUALITY ASSURANCE

- A. Contractor shall be a specialty company fully equipped to perform masonry rehabilitation work and be familiar with good construction practices.
 - 1. Field Supervision: The Contractor shall maintain an experienced full-time supervisor on the project site during any times when masonry rehabilitation and cleaning work is being performed. DO NOT change Field Supervisors during the project except for causes beyond the control of the Contractor.
- B. Contractor performing the work of this Section must have a minimum of Five (5) years successful experience in comparable masonry rehabilitation projects and employ skilled personnel in the rehabilitation process and operations indicated. The Engineer and Owner shall be provided with a list of comparable projects similar in magnitude and utilizing similar products dating back Five (5) years. The list shall include references from property Owners, Property Managers, Contractors and Engineers on previous projects.
 - 1. The Contractor shall employ skilled personnel who are familiar and experienced with the materials and methods specified and are familiar with the design requirements used in masonry rehabilitation work.
 - 2. Submit a resume for the Foreman demonstrating experience with previous projects of similar size and complexity. The documentation shall include references from Owners, Property Managers, Contractors and Engineers on previous projects.
- C. Obtain masonry materials from a single source with resources to provide materials of consistent quality in appearance and physical properties during the work. DO NOT change sources or manufacturers of masonry materials during the work.
- D. All work with special proprietary products shall be done in strict accordance with the manufacturer's instructions and recommendations.
- E. The Contractor must be trained and certified by the manufacturer on the proper use and application of all products. Only skilled, qualified manufacturer's trained personnel shall be

present during the execution of the work. The Contractor must include any costs of the Manufacturer's training and certification in the Contract Base Bid.

1.05 SUBMITTALS

- A. Provide submittals in accordance with the provisions of Section 01 3300 "Submittal Procedures".
- B. Product Data: Submit manufacturer's product data, technical literature and detailed installation instructions for all products. Include test reports and certifications substantiating products comply with requirements.
- C. Material Safety Data Sheets (MSDS): Submit manufacturer's MSDS sheets for all components of the work.
- D. Contractor Qualification Statement: Submit written qualification statement for the masonry Contractor and the Foreman documenting company and key personnel experience in conformance with the Quality Assurance requirements stated in this specification section.
- E. Samples for Verification: Submit the following items in time to prevent delay of the work and to allow adequate time for review and re-submittals, if needed; do not order materials or start work before receiving the written approval.
 - 1. Brick: Submit samples of exposed brick. Include full range of colors and textures to be used in the finished work. Submit as many samples as are required to match variations in the existing brick
 - 2. Cast Stone: Submit samples of color-matched repair mortar. Include custom blends as needed to match existing.
 - 3. Samples of sand, cement and lime shall be submitted for acceptance with certification that materials meets applicable ASTM and/or BIA requirements.
 - 4. Samples of repointing mortar, maximum of eight (8) samples, for each substrate material shall be submitted for acceptance by the Owner.
 - 5. Samples of masonry cleaning products, maximum of four (4) samples, for each substrate material shall be submitted for acceptance by the Owner.
- F. Field Mockup Samples: The Contractor shall prepare sample panels for the following work to be used as a quality standard for the work of this Section. Locations of test panels to be determined by Owner.
 - 1. Mockup Panels: Upon acceptance of brick type, by the Owner, Architect and Engineer build a minimum two free-standing, 2 foot high by 4 foot long (min.) brick mockup panels, at each building. Sample panels shall match existing brick layout and mortar joint width, texture and tooling.
 - a. Clean exposed faces of mockups with masonry cleaner.
 - 2. Repointing: Cut out and repoint joints at locations selected by the Owner and Engineer using materials and methods specified to establish workmanship and tooling to be used.

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Prepare test panels of approximately 8 square feet in size.

3. Cleaning: Clean façade surfaces at locations selected by the Owner using materials and methods specified to establish workmanship to be used. Prepare mock-up sample of approximately 10± square feet at four (4) locations.
 4. Samples panels accepted by the Owner and Engineer shall serve as a quality standard for all other similar work on the same building. Contractor to retain sample panels during construction in an undisturbed condition. Legally dispose of sample panels upon completion of the work.
 5. Acceptance of the sample panels does not constitute acceptance of deviations from the Contract Documents, unless such deviations are specifically accepted by the Owner and Engineer in writing.
- G. Cleaning: The Contractor shall submit a complete written description of the cleaning methods and materials proposed for each type of masonry and for each area. Include a list and technical literature for each type of manufactured cleaning solvent proposed in the work.
1. If methods and materials other than those indicated are proposed for cleaning work, provide a written description, including evidence of successful use of comparable projects and a testing program to demonstrate their effectiveness for this project.
 2. The Contractor shall test cleaners and methods on samples of adjacent materials for possible adverse reactions unless cleaners and methods are known to have deleterious effect.
 3. The Contractor shall submit methods and materials to control runoff during cleaning operations.
 4. The Contractor shall submit a written description of methods of protection for adjacent building surfaces and landscaping that may be adversely affected by cleaning methods.

1.06 DELIVERY, STORAGE & HANDLING

- A. Delivery of Materials: Deliver materials to the jobsite in original sealed, undamaged containers with labels intact and legible indicating material name, date of manufacture, expiration date and lot number.
- B. Storage of Materials:
1. Store all materials in strict accordance with manufacturer's and relevant regulatory agency requirements and recommendations.
 2. Store materials in a protected dry and well-ventilated area. Store materials out of direct sunlight and in original packaging. Store all materials at temperatures of 50°F and above to facilitate handling.
 3. Materials stored outside must be raised above ground, floor or roof level on pallets and covered with a waterproof material. Plastic wrapping installed at the factory must not be

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used as outside storage covers.

4. Store and protect all materials to prevent deterioration, damage or intrusion of foreign matter. DO NOT use and dispose of materials which are deteriorated, damaged or contaminated with foreign matter.
 5. Store cementitious materials in a protected dry and well-ventilated area, on elevated platforms and covered. DO NOT use and dispose of materials which are deteriorated, damaged or contaminated.
 6. Store hydrated lime in manufacturer's original and unopened containers. DO NOT use and dispose lime if containers have been damaged, deteriorated or have been opened for more than two days.
 7. Store sand where grading and other required characteristics can be maintained and contamination avoided. DO NOT use and dispose of materials which are deteriorated, damaged or contaminated.
 8. Store all materials in accordance with MSDS and in compliance with local fire authority and safety requirements. After partial use of materials replace lids promptly and tightly to prevent contamination.
- C. Handling of Materials: Handle and protect materials prior to and during installation in strict accordance with manufacturer's requirements and recommendations. Do not use and properly dispose of materials which are deteriorated, damaged or contaminated with foreign matter. Deteriorated, damaged or contaminated materials shall be replaced at the Contractor's expense.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Perform masonry rehabilitation work only when air and substrate temperature is between 40°F and 90°F and is predicted to remain within that range for at least 7 days after completion of the work. Comply with ACI, BIA and NCMA published requirements for environmental conditions at site during masonry work.
- B. No installation work shall be performed during rainy or inclement weather and on frost or wet covered surfaces. DO NOT commence with the installation until environmental conditions are suitable for the installation of materials.
- C. Cold Weather Requirements: Do not work in temperatures below 40°F, when the substrate is colder than 40°F, or when the temperature is expected to fall below 40°F for 48 hours after installation of repointing or repair mortars. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the material manufacturer. Remove work exposed to lower temperatures as directed by the Owner or his agent.
 1. The Contractor shall NOT proceed with any cold weather masonry until notified in writing to proceed by the Owner or his agent.
- D. Hot Weather Requirements: Protect repair mortar from direct sunlight and wind using protection measures submitted and approved when the ambient air temperature exceeds 70°F. Do not use or prepare mortar when ambient air temperature is above 90°F. Do not use or prepare mortar when

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ambient air temperature is above 90°F at the location of the work.

- E. Use all means necessary to protect the materials of this section before, during and after installation and to protect the work and material of other trades, the building and the public.
- F. Protection of Adjacent Materials:
 - 1. The Contractor shall be responsible for protecting all existing adjacent materials and during the execution of the work. Provide all necessary protection and work procedures to avoid damage to doors, windows, sills, ledges, flashing, roofing, and all other existing exterior material assemblies and landscape feature including sidewalks and paving.
 - 2. The Contractor shall repair all damage to adjacent materials caused by the execution of the work of this Section at no expense to the Owner. Damaged materials shall be repaired or replaced by mechanics experienced in the respective work to the satisfaction of the Owner.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

- A. It is the project intent that new brick masonry will be used in the masonry work.
- B. New Facing Brick: Facing brick shall be Type FBS, Grade SW, in conformance with ASTM C216. Facing brick shall match existing brick in size, color, range and texture.
 - 1. In some locations the existing brick may use a multicolor blend. The Contractor shall mix and blend multiple brick types to match the existing brick.
 - 2. The Owner and Engineer shall review and accept the final brick mockup samples.
 - 3. Each building will have one or more brick types, depending on the number of additions to the original construction. The Contractor shall match each brick type accordingly.

2.2 CAST STONE REPAIR MORTAR MATERIAL

- A. Cast Stone Repair Mortar Compound: Factory-mixed cementitious product that is custom manufactured for patching cast stone, is vapor and water permeable, exhibits low shrinkage and develops high bond strength to all type of stone. Formulate in colors and textures to match stone being patched.
 - 1. Jahn M90 Concrete & Precast Repair Mortar as manufactured by Cathedral Stone Products, Inc. Color shall be Custom Field Color Matched.
 - 2. Conproco Matrix Repair Mortar, as manufactured by Conproco Corporation. Color shall be Custom Field Color Matched.
 - 3. Acceptable Equivalent.

2.3 MORTAR MATERIALS

- A. White and/or Gray Portland Cement: ASTM C150, Type 'I', non-staining, without air

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entrainment. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.

- B. Hydrated Lime: ASTM C207, Type 'S'.
- C. Sand: ASTM C144, free of loam, silt, soluble salts and organic matter matching the color and texture of the existing mortar sand. Match size, texture and gradation of existing mortar sand as closely as possible. Blend several sands, if necessary, to achieve suitable match.
- D. Water: Potable, free from injurious amounts of oil, soluble salts, alkali, acids, organic impurities and other deleterious materials.
- E. Admixtures: No admixtures are permitted.
- F. Colored Mortar Pigment: Natural and synthetic iron oxides and chromium oxides compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.

2.4 MORTAR PROPORTIONS

- A. Mortar for Setting and Pointing: Type 'N' Mortar, complying with ASTM C270 and BIA M1, Proportion Specification, having the following proportions
 - 1. 1 Part White and/or Gray Portland Cement
 - 2. 1 Part Lime
 - 3. 6 Parts Sand(s)
 - 4. Water
 - 5. Mortar pigment, as required to match original mortar color

2.5 PREMIX MORTAR MATERIALS

- A. The Contractor shall use manufactured pre-mixed custom color blend, Type 'N' mortar consisting of Portland cement, hydrated lime and mortar pigment in lieu of job-site mixed mortar. The use of Masonry Cement is NOT permitted.
- B. Available Products: Subject to compliance with requirements, Manufacturer' products that may be incorporated into the Work include, but are not necessarily limited to the following specified

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products. Comparable Manufacturers' products may be incorporated into the work:

1. Glen-Gery; Color Mortar Blend
2. LaFarge; Eaglebond Portland & Lime, Custom Color
3. Spec Mix; Portland Lime & Sand Mortar, Custom Color
4. Acceptable Equivalent

2.6 MASONRY ANCHORING DEVICES

- A. Provide all anchors, dowels and other anchoring devices required to replace existing anchors exposed during the work of this Section and properly support the masonry work. All such items shall be type 304 stainless steel, unless noted otherwise.
- B. Cushions used to maintain joints: Lead or clear plastic of thickness required for the joint size indicated. Do not use wood shims.
- C. Provide special anchors required to properly support and anchor the stonework and masonry. All stone anchors shall be type 304 stainless steel.
- D. Masonry Retrofit Ties: Helical type flexible wall stabilization anchor, Stainless Steel Type 304, 8.0 mm diameter.
 1. Helifix, as manufactured by Helifix Inc., Converse, TX.
 2. Spira-lok, as manufactured by Hohmann & Barnard, Inc. Hauppauge, NY
 3. Heli-Tie, as manufactured by Simpson Strong-Tie Company, Inc., Pleasanton, CA.
 4. Acceptable Equivalent

2.7 PAINT MATERIALS - FERROUS SURFACES

- A. Basis-of-Design Product: The design of paint systems for ferrous (steel) surfaces is based on Sherwin Williams paint products. Comparable manufacturer products may be incorporated into the work.
- B. Steel coating: High performance, high solids content, rust inhibitive, low VOC alkyd coating.
- C. Color shall be selected by the Engineer from the manufacturer's full range of colors. Provide colors selected by Engineer for each surface to be painted.

2.8 CLEANING MATERIALS

- A. Water: Potable, free from injurious amounts of oil, soluble salts, alkali, acids, organic impurities and other deleterious materials.
- B. New Masonry Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for

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removing mortar smears and other construction soiling from brick masonry.

- C. Existing Masonry Cleaner: pH neutral, biodegradable liquid cleaner formulated for removing biological and air pollutant staining.
- D. The Contractor shall conduct a site test of the cleaning methods to confirm performance of proposed method. The Contractor may propose alternate cleaning methods and materials, subject to testing and acceptance by the Owner.

PART 3 - EXECUTION

3.1 PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting at the jobsite at least one (1) week prior to the start of masonry rehabilitation work. The Contractor, Engineer and Material Manufacturer's Representative, at the very minimum, shall be at this meeting. Review mockup samples, substrate preparation, application, curing and protection procedures along with coordination and scheduling required with related work.
- B. Contractor shall prepare a typed copy of meeting minutes and forward to all attendees and the Owner and Engineer.

3.2 EXAMINATION

- A. The Contractor shall thoroughly verify that all surfaces and site conditions are satisfactory for the installation of masonry materials. Should any deficiencies exist, the Contractor, Engineer and the Owner shall be notified in writing and necessary corrections made. DO NOT proceed with installation until unsatisfactory conditions are corrected. Start of installation means Contractor's acceptance of site conditions.
- B. Coordinate and furnish all anchorage items to be embedded in or attached to unit masonry construction without delaying the Work.
- C. Verify that all anchors, reinforcement and other items to be built into the unit masonry are accurately placed, positioned securely and will not affect the masonry work.

3.3 PROTECTION

- A. Protect pedestrians, motor vehicles, mechanical, electrical and plumbing equipment, surrounding construction, landscaping and surrounding building from damage or injury resulting from masonry rehabilitation work. Erect temporary protective covers over walkway and at points of pedestrian and vehicular entrance and exit that must remain in service during the work.
- B. Provide adequate protection against weather during the work maintaining an ABSOLUTE WATERTIGHT CONDITION THROUGHOUT THE WORK.
- C. When rain or snow is imminent, and work is to be discontinued, the tops of exposed masonry walls shall be covered with a well cured, non-staining, waterproof cover.
- D. Protect all new masonry work from damage, vibration, dust and any deleterious environmental effects during the work. Provide adequate cure time for repairs to allow for compressive and bond

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strength gain prior to performing demolition adjacent to repairs.

- E. Protect and prevent mortar from staining face of surrounding masonry and other surfaces during the work.
 - 1. Cover sills, ledges and projections to protect from mortar droppings.
 - 2. Keep wall areas wet below rebuilding and repointing work to discourage mortar from adhering to surfaces.
 - 3. Immediately clean and remove mortar in contact with unprotected exposed masonry and other surfaces.
 - F. Comply with masonry cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical cleaning solutions from coming into contact with pedestrians, motor vehicles, landscaping, buildings and other surfaces that could be harmed by such contact.
 - 1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners unless chemical cleaners is verified it will not damage surfaces. Use materials that contact only waterproof, UV-resistant adhesives. Remove temporary protection materials upon completion of the cleaning work.
 - 2. Keep wall areas wet below area being cleaned to prevent streaking from runoff.
 - 3. DO NOT clean masonry during winds of sufficient force to spread cleaning solution to unprotected surfaces.
 - 4. Neutralize and collect alkaline wastes for disposal off Owner's property.
 - 5. Dispose of runoff from wet operations in accordance with Local, State and Federal regulations and in a manner that prevents soil erosion, undermining of paving, foundations, damage to landscaping and water penetration into building interiors.
- 3.4 REMOVAL OF MISCELLANEOUS ANCHORS, FASTENERS & PATCHING
- A. Remove all unused or abandoned masonry anchors, wires, brackets and other items no longer in use unless indicated on the Contract Drawings to remain. Carefully remove unused or abandoned items to avoid spalling or cracking surrounding masonry.
 - B. Remove embedded anchor bolts and sleeves by drilling or coring.
 - C. If unused or abandoned items cannot be removed without damaging surrounding masonry, cut off flush with surface and core drill surrounding masonry and item as close as possible.
 - D. Patch and fill holes left where item is removed with repair mortar, unless directed otherwise by the Engineer to remove and replace affected units.
- 3.5 STABILIZATION & SHORING
- A. All necessary measures shall be taken to support and shore all affected adjacent masonry indicated

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to remain during removal of existing masonry and installation of new or original placement units.

- B. All masonry openings shall be adequately braced and shored.
- C. Remove cracked, broken or defective masonry shown on Drawings and located in the field. Use extreme care in removing existing defective masonry to avoid damage to adjacent surfaces to remain. Any masonry indicated to remain that is damaged or broken by the Contractor shall be replaced with new masonry at no additional cost to the Owner. Shapes, dimensions, finishes and setting of new and reset units shall match original.
- D. The Contractor shall remove existing brick masonry in an undamaged condition. Supplement broken or damaged brick masonry with new brick masonry units of comparable composition, size, color at no additional cost to the Owner.
- E. Carefully remove deteriorated masonry where shown on Drawings and located in the field. Do not cut through or damage existing structures to remain. After carefully removing defective units, clean all mortar from adjacent masonry surfaces indicated to remain.
- F. Replace all masonry anchors entirely exposed during the removal of masonry units, unless otherwise noted, with new stainless steel anchors accommodating existing conditions.
- G. Protect existing masonry and anchoring after removal of deteriorated masonry and prior to installation of replacement units. Use 6 mil reinforced polyethylene or other non-staining waterproof membrane.

3.6 MORTAR MIXING PROCEDURES

- A. Mix mortars in accordance with ASTM C270 and BIA M1.
- B. Measure materials in a dry condition by volume or equivalent weight. Do not measure by shovel.
- C. Combine and thoroughly mix cementitious materials, water and aggregates in a mechanical batch mixer. Comply with ASTM C270 standard for mixing time and water content, unless otherwise indicated.
- D. Mix ingredients in clean mechanical batch mixer 3 to 5 minutes.
 - 1. Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency.
- E. Let mortar sit 20 minutes prior to use to allow for initial shrinkage. Place mortar in final position within 1 hour of final mixing. DO NOT retemper or use partially hardened materials. Discard any mortar not used within the stated time.

3.7 MASONRY REBUILDING

- A. Removals:
 - 1. Comply with Local, State and Federal noise and dust ordinance regulations during

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demolition operations.

2. Carefully remove masonry units without causing damage to adjacent masonry to remain. Existing masonry units shall be removed and salvaged in an undamaged condition. Remove all mortar, loose particles, and soil from masonry by cleaning with hand chisels, saws, brushes, and water
3. Cracked masonry units shall be repaired and/or replaced as indicated and wherever else identified by the Engineer or by good construction practice. Stone units with a crack shall be repaired using a pinning and epoxy bonding technique. Install drilled-in stainless steel pins and epoxy bond cracked sections together.
4. Shore or support structure in advance of and after removal of units to maintain stability of remaining materials. Cut away any loose or unsound adjoining masonry to provide a firm and solid bearing for new work. Maintain flashing, reinforcement, lintels and adjoining construction in an undamaged condition.
5. Remove any existing mortar from adjoining masonry in order to lay new masonry entirely in new mortar. Wash out or otherwise remove all loose mortar and dust with appropriate methods.

B. Installation:

1. Match coursing and bonding of existing masonry work. Each course shall key into and be flush with existing work.
2. Install new stainless steel stone anchors to support each stone unit.
3. Lay masonry units, level and true to line in full beds of mortar. Lay in bond to match existing, original masonry. Lay masonry units with completely filled bed, head and collar joints; butter ends with sufficient mortar to fill head joints completely and insert into place. Do not slush head joints. Maintain joint width for replacement units to match existing joints.
4. Remove masonry units disturbed after laying; clean and reset in fresh mortar. DO NOT pound corners at returns. If adjustments are required, remove units, clean off mortar and rest in fresh mortar.
5. Place new masonry anchors spaced at 16 inches apart horizontally and vertically.
6. New and adjacent existing masonry shall be saturated surface dry (SSD) prior to installation of masonry units. DO NOT apply masonry materials to a dry substrate surface.
7. Joints shall be uniform and shall match existing stonework. Tool with stainless steel jointer after becoming thumb-print hard.

3.8 REPOINTING

- A. Comply with Local, State and Federal noise and dust ordinance regulations during demolition

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operations.

- B. Inclusive areas of masonry to be repaired are shown on the Drawings and identified by the Engineer in the field.
- C. Wall surfaces must be pre-soaked with water and be wet prior to cutting of mortar joints.
- D. Cut out mortar joints of the exterior surfaces of the building with a power grinder or non-power hand tool methods. Perform final cleaning of all joints by hand using a chisel ¼ inch or less in width. Clean all mortar from surfaces within the joint so the new pointing mortar bonds to the building material, not old mortar.
 - 1. Do not commence with repointing operations until repointing test panels have been reviewed and accepted by Owner. In all cases, if installation is deficient, the Contractor will cease repointing operations, without additional cost to the Owner, until deficiencies in tools, workmanship or methodologies have been corrected to the Owner's satisfaction.
 - 2. DO NOT damage, spall or widen masonry joints. Contractor in preparing test panel shall demonstrate ability of mechanics to use tools without damaging masonry.
 - a. Contractor shall replace all brick damaged during mortar removal with replacement units at no additional cost to the Owner.
 - 3. If mechanical grinding/cutting is found unacceptable, Contractor shall use only non-power hand tool methods.
- E. Joint depth shall be at least 1-1/2 times joint width but in all cases cut back to expose sound mortar. All joints shall be cut out a minimum of ¾ inch deep.
- F. Brush, vacuum or flush joints or cracks to remove all dirt and loose debris, working from top to bottom of the wall.
- G. Exposed wall surfaces must be pre-soaked with water a maximum of 10 minutes prior to application of pointing mortar. The exposed surface of masonry adjacent to the joint shall be maintained in a moist condition. Maintain a water sprayer on site at all times during the repointing process.
- H. Rinse masonry joint with water to remove dust and mortar particles. Joint surfaces must achieve a saturated surface dry (SSD) state prior to the application of pointing mortar. DO NOT apply materials to a dry joint substrate surface. Adjust timing of water rinse so excess water has evaporated or run off at the time of mortar application. Maintain masonry-joint surfaces in a SSD state throughout repointing application.
- I. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply pointing mortar in 1/4 inch thick layers of “lifts” until a uniform depth is formed. Compact each layer thoroughly and allow it to become thumb-print hard before applying the succeeding layer.
- J. After low areas have been filled to same depth as remaining joints, apply pointing mortar to all joints. Apply pointing mortar in 1/4 inch thick layers of “lifts” until a uniform depth is formed. Compact each layer thoroughly and allow it to become thumb-print hard before applying the

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succeeding layer.

1. Mortar must be kept off the face of adjacent masonry surfaces. DO NOT allow mortar materials to remain on adjacent masonry surfaces or to feather edge mortar joints.
- K. When the final layer of mortar is thumb-print hard, tool to form final joint. All joints shall receive a tooled concave joint profile, unless noted otherwise. Treat finished surface to achieve desired appearance and finish consistent with mockup sample.
- L. Protect freshly placed mortar from premature drying, excess cold or hot temperatures and mechanical injury. All mortar must be cured in a moist condition for a minimum of 72 hours after installation. Thoroughly soak the wall after the mortar has set and the finish joint profile is complete. Water soak the wall regularly throughout the curing period (approximately 9 wet-to-dry cycles) allowing the wall to dry out between applications.
- M. Adjust curing methods to ensure that the pointing mortar is damp without eroding the surface of the mortar. Allow mortar to cure and harder a minimum of 28 days before starting cleaning work.

3.9 STONE REPAIR MORTAR

- A. Remove anchors from stone surface. Remove soil, loose particles, mortar and other debris or foreign matter from stone surfaces to which patching compound will be bonded.
- B. Mix patching compound in individual batches to match each stone unit being patched. Combine one or more colors of patching compound to produce exact color match to existing stone units.
- C. Brush-coat repair surfaces with slurry coat of patching compound according to manufacturer's written instructions.
- D. Place patching compound in layers as recommended by patching compound manufacturer, but not less than ¼ inch or more than 2 inches thick. Roughen surface of each layer to provide a key for next layer.
 1. Trowel, scrape or carve surface of patch to match texture and surface plane of surrounding stone. Shape and finish surface before or after curing, as determined by testing, to best match existing stone.
 2. Build patch up ¼ inch above surrounding stone and carve surface to match adjoining stone after patching compound has hardened.
- E. Keep each layer damp for 72 hours or until patching compound is set.
- F. Remove and replace patches with hairline cracks or that show separation from stone at edges and those that do not match adjoining stone in color or texture.

3.10 PAINT APPLICATION - FERROUS SURFACES

- A. Clean and prepare steel surfaces by power tool cleaning in accordance with Steel Structures Painting Council Specification SSPC-SP3. Remove any oil or grease from surfaces by solvent cleaning in accordance with SSPC-SP1.
- B. Do not apply paint products until surface is dry and free of detrimental conditions within the

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limitations recommended by paint manufacturer. Apply first coat to surfaces that have been cleaned and prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

- C. Carefully mix and prepare paint materials in strict accordance with manufacturer's written instructions. Stir materials before applying to produce a mixture of uniform density. Stir as required during application to maintain uniform density.
- D. Apply each material coat in conformance with the manufacturer's recommended spreading rate. Provide total dry film thickness (DFT) of a minimum 3.0 mils per coat. Apply a minimum of two (2) coats to all steel surfaces.
- E. Prepare surfaces between succeeding coats in accordance with manufacturer's requirements.
- F. Comply with product manufacturer's recommendations for drying time between succeeding coats. Paint products must be recoated within the maximum time allowed or the surface must be prepared for adhesion.
- G. Finish coats shall be smooth, free of brush marks, streaks, laps or pile up of paints and skipped or missed areas

3.11 CLEANING, GENERAL

- A. The Contractor may provide cleaning methods and materials not specified in this or Subsection 2.06 to the Owner for acceptance, provided method and materials do not violate the stated general cleaning requirements.
- B. No work shall commence until methods and materials for each type of cleaning are reviewed and accepted by the Owner. The Contractor shall conduct a site test of cleaning methods and materials to confirm that etching of glass and chemical damage to surfaces, such as paint and metal, will not occur.
- C. The Contractor may provide plastic, spray-on, peel-off type liquid material or other type covering to completely cover glass, painted and other surfaces that may be adversely affected by cleaning methods and materials. Maintain coverings until cleaning operations are completed and no longer necessary in that particular location.
- D. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings and interstices and that produces an even effect without streaking or damaging stone surfaces.
- E. No water pressure washing in excess of 1,000 psi and no grit blasting, either dry, wet or otherwise, shall be permitted on masonry surfaces.
- F. Do not use wire brushes or brushes that may cause residual staining of masonry surfaces and are not resistant to chemical cleaner being used. Do not use plastic bristle brushes if natural fiber brushes will resist chemical cleaner being used.
- G. Completely remove plant, moss and shrub growth from masonry surfaces. Carefully remove plants, creepers and vegetation by cutting at roots and allowing to dry as long as possible before

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removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.

- H. Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods. Remove accumulations of paint, caulking or asphalt materials from surfaces. DO NOT damage masonry surfaces.

3.12 MASONRY CLEANING

A. New and Existing Masonry Cleaning

1. Wet masonry surfaces with water applied by low-pressure (900 psi) spray.
2. Apply cleaning solution by brush. Allow cleaning solution to remain on the surface for duration recommended by manufacturer.
3. Scrub masonry surfaces until soil and dirt are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices.
4. Do not let cleaning solution “dry in” to the masonry. Rewet surfaces and reapply cleaner in accordance with manufacturer’s requirements.
5. Rinse with water applied by low-pressure (900 psi) spray to remove chemical residue and soil.
6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

3.13 FINAL CLEANING

A. Cleaning Requirements:

1. Remove large particles of mortar using wood paddles and scrapers.
2. Acid cleaning will not be permitted, therefore Contractor should use all reasonable means to keep the exposed masonry work clean while it is being laid.
3. Upon completion of the work, scrub down areas with fiber brushes using clean water and an acid-free detergent.

- B. Wash and clean mortar materials from all adjacent non-masonry surfaces. Clean and remove all materials and debris from roof areas.

- C. Sweep and rake adjacent pavement and ground to remove masonry debris. Clean and wash surfaces to remove all masonry materials, dirt and stains to the satisfaction of the Owner.

3.14 CLEANUP AND PROTECTION

- A. Promptly as the work proceeds and on completion, clean up and remove from the premises all rubbish and surplus materials resulting from the work.
- B. Clean to the Owner’s and Engineer’s satisfaction, soiled surfaces, spatters, and damage caused by

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work of this Section.

1. Protect masonry and other items built into masonry walls from damage throughout the work. Protect exposed external corners subject to damage. Repair and/or replace any damaged masonry to the satisfaction of the Owner at no additional cost.

END OF SECTION

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel pipe and tube railings.

1.2 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Railing brackets.
 - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
 - 1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
 - 2. Fittings and brackets.
- D. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.

- B. Welding certificates.
- C. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.
- D. Evaluation Reports: For post-installed anchors , from ICC-ES.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.7 FIELD CONDITIONS

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building construction.
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
 - b. Infill load and other loads need not be assumed to act concurrently.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F material surfaces.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
 - 1. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.3 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
- B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide galvanized finish for exterior installations and where indicated.
- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.4 FASTENERS

- A. General: Provide the following:
 - 1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
 - 2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
 - 2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
 - 3. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Shop Primers: Provide primers that comply with Section 099000 "Painting and Coating."
- E. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- F. Intermediate Coats and Topcoats: Provide products that comply with Section 099000 "Painting and Coating."
- G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- H. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
 - 1. Water-Resistant Product: At exterior locations and where indicated provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.6 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

- G. Connections: Fabricate railings with either welded or nonwelded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.
- J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
 - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- K. Form Changes in Direction as Follows:
 - 1. By bending or by inserting prefabricated elbow fittings.
- L. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- M. Close exposed ends of railing members with prefabricated end fittings.
- N. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- O. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
 - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- P. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- Q. For railing posts set in concrete, provide steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

2.7 STEEL AND IRON FINISHES

- A. Galvanized Railings:
 - 1. Hot-dip galvanize indicated steel railings, including hardware, after fabrication.
 - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
 - 3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
 - 4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
 - 5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- D. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, galvanize anchors to be embedded in exterior concrete or masonry.
- E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
 - 1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Other Railings: SSPC-SP 3, "Power Tool Cleaning."
- F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
- G. Shop-Painted Finish: Comply with Section 099000 "Painting and Coating."
 - 1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.

- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
 - 1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.4 ANCHORING POSTS

- A. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Cover anchorage joint with flange of same metal as post, welded to post after placing anchoring material.
- C. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:

1. For aluminum pipe railings, attach posts using fittings designed and engineered for this purpose.
2. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

3.5 ATTACHING RAILINGS

- A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends or connected to railing ends using nonwelded connections.
- B. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- C. Secure wall brackets and railing end flanges to building construction as follows:
 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 2. For hollow masonry anchorage, use toggle bolts.
 3. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
 4. For steel-framed partitions, use hanger or lag bolts set into fire-retardant-treated wood backing between studs. Coordinate with stud installation to locate backing members.

3.6 ADJUSTING AND CLEANING

- A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099000 "Painting and Coating."
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A 780/A 780M.

3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood blocking, and nailers.
2. Plywood backing panels and other applications as indicated on Drawings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

1.3 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency

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certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Provide dressed lumber, S4S.

B. Maximum Moisture Content of Lumber: 19 percent.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPAC U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Borate Preservative: Water-borne borate oxide (SBX) preservative.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood blocking, and similar concealed members in direct contact with masonry or concrete.
3. Wood construction as specified in other sections.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity.

C. Kiln-dry after treatment.

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1. Lumber: 19 percent maximum moisture content.
 2. Plywood: 15 percent maximum moisture content.
- D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Application: Treat items indicated on Drawings, and the following:
1. Concealed interior blocking.
 2. Roof blocking.
 3. Wood nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.
 4. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
 2. Nailers.
 3. Rooftop equipment bases and support curbs.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber and any of the following species:
1. Hem-fir (north); NLGA.
 2. Mixed southern pine; SPIB.
 3. Spruce-pine-fir; NLGA.
 4. Hem-fir; WCLIB or WWPA.
 5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
- C. Select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: DOC PS 1, Exterior, AC, fire-retardant treated, 3/4-inch thick.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
1. All Applications: ASTM A 153/A 153M hot-dip galvanized.
- B. Power-Driven Fasteners: NES NER-272.

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- C. Screws for Fastening to Metal Framing:
 - 1. Cold-Formed Metal Framing: ASTM C 954.
 - 2. Other Metal Framing: ASTM C 1002.
- D. Lag Bolts: ASME B18.2.1.
- E. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- F. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.7 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate carpentry supports to comply with requirements for attaching other construction.
- B. Where lumber without preservative treatment is attached to concrete or masonry, install continuous flexible flashing separator between wood and substrate.
- C. Install plywood backing panels by fastening to studs with fire retardant classification marking exposed to view; coordinate locations with utilities requiring backing panels.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

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- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

END OF SECTION

PART 1 - GENERAL

A. Section Includes:

1. Manufactured through-wall flashing with counterflashing.
2. Manufactured reglets with counterflashing.
3. Formed roof-drainage sheet metal fabrications.
4. Formed low-slope roof sheet metal fabrications.
5. Formed wall sheet metal fabrications.
6. Formed equipment support flashing.

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.

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2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
 3. Include identification of material, thickness, weight, and finish for each item and location in Project.
 4. Include details for forming, including profiles, shapes, seams, and dimensions.
 5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
 6. Include details of termination points and assemblies.
 7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
 8. Include details of roof-penetration flashing.
 9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
 10. Include details of special conditions.
 11. Include details of connections to adjoining work.
 12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.
- D. Samples for Verification: For each type of exposed finish.
1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
 2. Trim, Metal Closures, Expansion Joints, Joint Intersections, Fascia, Copings, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
 3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.
 4. Anodized Aluminum Samples: Samples to show full range to be expected for each color required.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Product Certificates: For each type of coping and roof edge flashing that is SPRI ES-1 tested.
- C. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

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1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
 - 1. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
 - 1. Build mockup of typical roof edge, including fascia trim, approximately 10 feet long, including supporting construction cleats, seams, attachments, underlayment, and accessories.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.9 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

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1. Finish: 2B (bright, cold rolled).

2.3 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.
- B. Synthetic Underlayment: Laminated or reinforced, woven polyethylene or polypropylene, synthetic roofing underlayment; bitumen free; slip resistant; suitable for high temperatures over 220 deg F; and complying with physical requirements of ASTM D 226/D 226M for Type I and Type II felts.

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

- a. Atlas Roofing Corporation; Summit.
- b. Engineered Coated Products; Nova-Seal II.
- c. Kirsch Building Products, LLC; Sharkskin Ultra.
- d. SDP Advanced Polymer Products Inc; Palisade.

- C. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.

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

- a. Carlisle Residential, a division of Carlisle Construction Materials; WIP 300HT.
- b. Grace Construction Products, a unit of W. R. Grace & Co.-Conn.; Grace Ice and Water Shield HT.
- c. Henry Company; Blueskin PE200 HT.
- d. Kirsch Building Products, LLC; Sharkskin Ultra SA.
- e. Metal-Fab Manufacturing, LLC; MetShield.
- f. Owens Corning; WeatherLock Specialty Tile & Metal Underlayment.
- g. Polyguard Products, Inc.; Deck Guard HT.
- h. Protecto Wrap Company; Protecto Jiffy Seal Ice & Water Guard HT.
- i. SDP Advanced Polymer Products Inc; Palisade SA-HT.

2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.

- D. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft.minimum.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

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- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
 - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
 - 2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
 - 3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- C. Solder:
 - 1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane or silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

2.5 MANUFACTURED SHEET METAL FLASHING AND TRIM

- A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Cheney Flashing Company.
 - b. Fry Reglet Corporation.
 - c. Heckmann Building Products, Inc.
 - d. Hickman, W. P. Company.

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- e. Hohmann & Barnard, Inc.
- f. Sandell Manufacturing.
- 2. Material: Stainless steel, 0.019 inch thick.
- 3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
- 4. Stucco Type: Provide with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
- 5. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
- 6. Accessories:
 - a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
 - b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
- 7. Finish: Mill.

2.6 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."
- D. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.

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- E. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
- I. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.
- J. Do not use graphite pencils to mark metal surfaces.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.
 - 1. Coping Profile: As indicated on Drawings.
 - 2. Joint Style: Butted with expansion space and 6-inch-wide, concealed backup plate.
 - 3. Fabricate from the Following Materials:
 - a. Aluminum: 0.050 inch thick.
- B. Transitions Between Roof and Other Assemblies: Fabricate from the following materials: Shop fabricate interior and exterior corners.
 - 1. Aluminum: 0.050 inch thick.
- C. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
 - 1. Stainless Steel: 0.019 inch thick.
- D. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
 - 1. Stainless Steel: 0.019 inch thick.
- E. Flashing Receivers: Fabricate from the following materials:
 - 1. Stainless Steel: 0.016 inch thick.

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- ## 2.8 WALL SHEET METAL FABRICATIONS

- ## 2.9 MISCELLANEOUS SHEET METAL FABRICATIONS

- ## 2.10 ACCESSORIES

- ## PART 3 - EXECUTION

3.1 EXAMINATION

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3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

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

3.2 UNDERLAYMENT INSTALLATION

- A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.
- B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.
- C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.
- D. Apply slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

3.3 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 5. Torch cutting of sheet metal flashing and trim is not permitted.
 6. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

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1. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder metallic-coated steel and aluminum sheet.
 2. Do not pre-tin zinc-tin alloy-coated stainless steel and zinc-tin alloy-coated copper.
 3. Do not use torches for soldering.
 4. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
 5. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

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3.4 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.
- C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.
 - 1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 24-inch centers.
 - 2. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.
- D. Copings: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.
- E. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.
- F. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches. Secure in waterproof manner by means indicated on Drawings.
- G. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

3.5 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

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3.6 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.
- B. Overhead-Piping Safety Pans: Suspend pans from structure above, independent of other overhead items such as equipment, piping, and conduit, unless otherwise indicated on Drawings. Pipe and install drain line to plumbing waste or drainage system.

3.7 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

3.8 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

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SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.
 - 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.4 INFORMATIONAL SUBMITTALS

- A. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.

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1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.
- C. Notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."

2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. 3M Fire Protection Products.
 - 2. A/D Fire Protection Systems Inc.
 - 3. Construction Solutions.
 - 4. Grabber Construction Products.
 - 5. Hilti, Inc.
 - 6. HOLDRITE.
 - 7. NUCO Inc.
 - 8. Passive Fire Protection Partners.
 - 9. RectorSeal.
 - 10. Specified Technologies, Inc.
 - 11. STC Sound Control.
 - 12. Tremco, Inc.

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2.3 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
 - 2. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. W-Rating: Provide penetration firestopping showing no evidence of water leakage when tested according to UL 1479.
- E. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
 - 1. Permanent forming/damming/backing materials, including the following:
 - a. Slag-wool-fiber or rock-wool-fiber insulation.
 - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
 - c. Fire-rated form board.
 - d. Fillers for sealants.
 - 2. Temporary forming materials.
 - 3. Substrate primers.
 - 4. Collars.
 - 5. Steel sleeves.

2.4 FILL MATERIALS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.

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- E. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of nonsag grade for both opening conditions.

2.5 MIXING

- A. For those products requiring mixing before application, comply with penetration firestopping manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.

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3. Remove laitance and form-release agents from concrete.

- B. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

3.3 INSTALLATION

- A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.
- C. Install fill materials for firestopping by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.

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- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

END OF SECTION

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SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Nonstaining silicone joint sealants.
2. Urethane joint sealants.
3. Butyl joint sealants.
4. Latex joint sealants.
5. Spray foam sealants.
6. Acoustic sealants

B. The required applications include, but are not necessarily limited to the following:

1. Miscellaneous construction joints.
2. Partition joints.
3. Sealing of penetrations.
4. Not all sealants listed will be necessary for this project. **The Contractor is responsible for selecting the proper sealant from this list for the appropriate application.**

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

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- B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- D. Field-Adhesion-Test Reports: For each sealant application tested.
- E. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
 - 2. Conduct field tests for each kind of sealant and joint substrate.
 - 3. Notify Architect seven days in advance of dates and times when test joints will be erected.
 - 4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.

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6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.7 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: 20 years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

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2.2 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 756 SMS.
 - b. GE Construction Sealants; SilPruf NB.
 - c. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 295 FPS NB.
 - d. Pecora Corporation; 864NST.
 - e. Tremco Incorporated; Spectrem 2.
 - 2. Locations: Joints adjacent to masonry or that may drain onto masonry.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Uses T and NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. LymTal International, Inc.; Iso-Flex Iso-Flex 875R.
 - 2. Locations: Joints in floor slab.
- B. Urethane Iso-Flex 880GB will meet or exceed the requirements of ASTM C920, Type M, Class 25, Use T, NT, M. Two component, self leveling chemically curing, urethane sealant for horizontal joints.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. LymTal International, Inc.; Iso-Flex 880 GB.
 - 2. Locations: Joints in exterior slabs.

2.4 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C 1311.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Bostik, Inc.; Chem-Calk 300.
 - b. Pecora Corporation; BC-158.
 - c. Tremco; Tremco Butyl Sealant.

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2.5 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Construction Chemicals, LLC, Building Systems; Sonolac.
 - b. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex 600.
 - c. Pecora Corporation; AC-20.
 - d. Sherwin-Williams Company (The); 850A.
 - e. Tremco Incorporated; Tremflex 834.
 - 2. Locations: Interior joints.

2.6 SPRAY FOAM SEALANT

- A. Spray Foam Gap and Crack Sealant: AAMA 812; one- or two-component, foamed-in-place, polyurethane foam with the following characteristics:
 - 1. Density: 2.9 PCF maximum.
 - 2. Surface Burning Characteristics: ASTM E84.
 - 3. Flame Spread Index: 25, maximum.
 - 4. Smoke Developed Index: 450, maximum.
 - 5. Initial R-Value: ASTM C518; 4 per inch thickness, minimum.
 - 6. Maximum Pressure: 1.25 psig.
 - 7. Products:
 - a. The Dow Chemical Company; Great Stuff Pro Window and Door Insulating Foam Sealant.
 - b. Tremco; TremGlaze Low Expansion Polyurethane Foam Sealant.

2.7 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BASF Construction Chemicals, LLC, Building Systems.
 - b. Construction Foam Products, a division of Nomaco, Inc.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) Type B (bicellular material with a surface skin) , and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

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2.8 ACOUSTIC SEALANT

- A. Acoustical Sealant for Exposed **and Concealed** Joints: Manufacturer's standard nonsag, paintable, nonstaining acrylic-based acoustical sealant complying with ASTM C 834.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Owens Corning Quiet Zone Acrylic-based sealant or architect approved equivalent.
 - 2. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors
- B. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.

2.9 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum

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bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

- a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - d. Exterior insulation and finish systems.
3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

- a. Metal.
- b. Glass.
- c. Porcelain enamel.
- d. Glazed surfaces of ceramic tile.

- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.

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3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.4 SPRAY FOAM SEALANT INSTALLATION

- A. Install spray foam sealant in accordance with manufacturer's instructions.
- B. Fill cracks and gaps at wall framing openings to provide continuous thermal barrier.
- C. Install foam without causing deflection in adjacent window and door frames in excess of allowable tolerances for proper operation and performance of windows and doors.
- D. Trim excess foam flush with adjacent surfaces.

3.5 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
 - b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

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4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.6 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.7 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

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079200 – JOINT SEALANTS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide all labor, superintendence, materials, tools, equipment, transportation, and all means of construction necessary to complete the work, as indicated on the Contract Drawings, described in the Project Specification, or as is necessary to complete the Contract.
- B. The scope of work shall include, but is not necessarily limited to the following:
 - 1. Apply high performance sealant at all joints conditions and other locations noted on the drawings.
 - 2. Provide joint fillers and other backing materials, bond breakers, primers, and other required accessories.
 - 3. Apply high performance sealant tape at all metal coping joints conditions and other locations noted on the drawings.

1.02 RELATED WORK

- A. Section 03 0130: *Concrete Rehabilitation*
- B. Section 04 0100: *Masonry Rehabilitation*
- C. Section 09 2423: *Stucco Repairs*

1.03 REFERENCE STANDARDS

- A. Organizations whose standards are referenced herein are as follows:
 - 1. FS – Federal Specification, TT-S-00227E, Type II, Class ‘A’.
 - 2. ASTM C661: Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.
 - 3. ASTM C719: Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement.
 - 4. ASTM C920: Standard Specification for Elastomeric Joint Sealants
 - 5. ASTM C1135: Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants
 - 6. ASTM C1193: Standard Guide for Use of Joint Sealants
 - 7. ASTM C1248: Standard Test Method for Staining of Porous Substrate by Joint Sealants
 - 8. ASTM C1523: Standard Test Method for Determining Modulus, Tear and Adhesion Properties of Precured Elastomeric Joint Sealants

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: The Manufacturer shall be a company specializing in applicable sealant systems for a minimum of **Ten (10) years**. The Manufacturer shall supply a list of projects where their products have been used on similar sized projects with similar jobsite and exposure conditions.

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B. Applicator Qualifications:

1. The Applicator shall be familiar with and fully equipped to apply sealant materials and shall be familiar with good construction practices. The Applicator shall be fully knowledgeable of all requirements of the contract documents and be aware of all job site conditions that will affect their work.
2. The Applicator must have a minimum **Five (5) years** experience in the application of the same or similar sealant systems. Submit written qualification statement documenting company and key personnel experience and at least Five (5) projects similar in magnitude completed within the last Five (5) years.

C. Obtain sealants materials from a single manufacturer to ensure compatibility throughout the system.

1.05 SUBMITTALS

- A. Provide submittals in accordance with the provisions of Section 01 3300 “Submittal Procedures”.
- B. Product Data: Submit manufacturer’s product data, technical literature and detailed installation instructions for each product, primer, joint backup material, including detailed instructions for surface preparation, mixing and application.
- C. Material Safety Data Sheets (MSDS): Submit manufacturer’s MSDS sheets for all specified products.
- D. Samples for Initial Selection Purposes: Manufacturer’s standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.
- E. Field Mockup Samples: Install four (4) inch long sample of sealant(s) to the selected in building joints for further verification of colors selected from sample submittals and to represent completed work for qualities of appearance, materials and application.
 1. Mockup samples shall serve as a quality standard for all other similar work on the same building. Contractor must retain accepted mockup samples during construction in an undisturbed condition. Mockups shall be reviewed by the Owner, Architect, and Engineer.
 2. Acceptance of samples does not constitute approval of deviations from the Contract Documents, unless such deviations are specifically accepted by the Owner and Engineer in writing.
- F. Manufacturer Certificate: Submit certificates from manufacturers of joint sealers attesting that their product complies with specification requirements and are suitable for the use indicated.
- G. Applicator Qualification Statement: Submit written qualification statement documenting company and key personnel experience and at least Five (5) projects similar in magnitude completed within the last Five (5) years.
- H. Product test reports for each type of joint sealer indicated, evidencing compliance with specification requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Deliver sealant materials to the site in original, sealed, undamaged containers properly labeled or accompanied by acceptable evidence of compliance with specified requirements.

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- B. Storage of Materials: Store all materials in strict accordance with Manufacturer's requirements and recommendations.
 - 1. Store materials in a protected, dry and well ventilated area, out of direct sunlight and in original packaging. Store all materials at temperatures of 50°F and above to facilitate handling.
 - 2. Store all materials in accordance with MSDS and in compliance with local fire authority and safety requirements. After partial use of materials replace lids promptly and tightly to prevent contamination.
 - 3. All flammable materials must be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on container or supplied by material manufacturer or supplier.
- C. Handling of Materials: Handle and protect materials prior to and during installation in strict accordance with manufacturer's requirements and recommendations. DO NOT use materials which have been damaged. Damaged materials shall be replaced at the Contractor's expense.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Sealant materials must be applied within strict conformance to manufacturer's requirements regarding safety and weather conditions.
- B. No installation work shall be performed during rainy or inclement weather and on frost or wet covered surfaces. DO NOT commence with the application until environmental conditions are suitable for the application of the materials.
- C. Ensure that substrate materials are dry and free of contaminants. DO NOT commence with the application unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the application of the materials.
- D. Cold Weather Requirements: DO NOT work when ambient temperature is below 45°F, when the substrate temperature is below 40°F, or when the ambient temperature is expected to fall below 40°F for 48 hours after installation of repair materials. Ambient temperature must be a minimum of 40°F and rising, and more than 5°F above the dew point. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the material manufacturer. Remove work exposed to lower temperatures as directed by the Owner or Engineer.
- E. Hot Weather Requirements: Special precautions must be taken when ambient and/or substrate temperature is at or above 90°F. Consult with system manufacturer for special requirements and precautions.
- F. During application it is essential that maximum effort is made to control and eliminate aromatic odors prior to and during the application of sealant products. The Contractor shall implement odor control and elimination measures prior to and during the application of the waterproofing materials.
 - 1. Coordinate with the Owner to close or shut down air-intake equipment in the vicinity of the work that could affect indoor air quality.
 - 2. Protect Contractor personnel and building occupants near the work area from exposure to vapors from sealant products as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.

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1.08 FIELD TEST SAMPLES

- A. Contractor shall test sealant and primers to insure compatibility with a standard pull test. A standard pull test shall be performed for every 200 lineal feet of sealant. The sealant/primer will be rejected if adhesion failure occurs. Contractor is responsible for providing the primer necessary to achieve adhesion.

1.09 WARRANTY

- A. Submit certificate stating that urethane sealants will be tight in all joints without cracking, splitting or other signs of deterioration for a minimum of **Five (5) years** from substantial completion.
- B. Submit certificate stating that silicone sealants will be tight in all joints without cracking, splitting or other signs of deterioration for a minimum of **Ten (10) years** from substantial completion.
- C. If the sealant(s) fail within the guarantee period, the Contractor will replace this sealant in a satisfactory manner at no additional cost to the Owner. This includes all access, rigging and protection without prorating.

PART 2 - PRODUCTS

2.01 SEALANT MATERIALS

- A. Silicone Sealant: ASTM C920 one-part, ultra-low modulus silicone sealant, Type S, Grade NS, Class 50 complying with the requirements for uses NT, M, G, A & O
 - 1. Available Products: Subject to compliance with requirements, Manufacturers' products that may be incorporated into the Work include, but are not necessarily limited to, the following specified products. Comparable manufacturers' products may be incorporated into the work:
 - a. Pecora 890 NST as manufactured by Pecora Corp., Harleysville, PA.
 - b. DOWSIL 790 Building Sealant, as manufactured by Dow Corning Corporation, Midland, MI.
 - c. Sikasil WS-290 as manufactured by Sika Corporation, Lyndhurst, NJ.
 - d. Acceptable equivalent.
 - 2. Primer: Compatible with selected sealant as recommended by Manufacturer
 - 3. Color: The sealant color shall be a standard color. The Contractor shall provide physical samples of colors to verify match with existing color. More than one color may be required at each building.
 - 4. Locations:
 - a. Window perimeters
 - b. Windowsill coping stones.
 - c. Door perimeters
 - d. Control joints
 - e. Roof terminations
 - f. Vent perimeters
 - g. Soffit joints
 - h. Fascia joints
 - i. Wherever else indicated on the Drawings or by good construction practice.

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- B. Urethane Sealant: ASTM C920 one-part, Type S, Grade NS, Class 35 complying with the requirements for uses T, NT, M, I, A & O.
 - 1. Available Products: Subject to compliance with requirements, Manufacturers' products that may be incorporated into the Work include, but are not necessarily limited to, the following specified products. Comparable manufacturers' products may be incorporated into the work:
 - a. Sikaflex-1A as manufactured by Sika Corporation, Lyndhurst, NJ.
 - b. Acceptable equivalent.
 - 2. Primer: Compatible with selected sealant as recommended by Manufacturer
 - 3. Color: The sealant color shall be a standard color. The Contractor shall provide physical samples of colors to verify match with existing color. More than one color may be required at each building.
 - 4. Locations:
 - a. Horizontal control joints
 - b. Building & stair perimeters
 - c. As required beneath façade coatings
 - d. Wherever else indicated on the Drawings or by good construction practice.

2.02 JOINT SEALANT PACKING

- A. General: Provide sealant backings of material and type which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and shall be of types as manufactured or recommended by sealant manufacturer based on field experience and laboratory testing.
- B. Bond Breaker Tape: Provide polyethylene tape or other plastic tapes as recommended by sealant manufacturer to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tapes where available.
- C. Plastic Foam Joint Filler: Preformed, compressible, closed-cell foam recommended by sealant manufacturer; non-staining, non-gassing, moisture-proof and forming no bond with sealant materials in accordance with ASTM standards. Size, shape and density as required to control sealant depth and otherwise contributing to producing optimum sealant performance.

PART 3 - EXECUTION

3.01 PRE-INSTALLATION MEETING

- A. Convene a pre-construction meeting at the jobsite at least one (1) week prior to the start of sealant work. The Contractor, Applicator and Material Manufacturer's Representative, at the very minimum, shall be at this meeting. Review mockup samples, substrate preparation, application and protection procedures along with coordination and scheduling required with related work.
- B. Contractor shall prepare a typed copy of meeting minutes and forward to all attendees and the Owner and Engineer.

3.02 EXAMINATION

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- A. Contractor, with Applicator present, shall thoroughly examine all substrate and site conditions to verify actual locations, dimensions and other conditions are satisfactory for the installation of sealant work. Examine and verify substrate surfaces are sound, dry, smooth, clean, sloped for drainage and securely anchored.
- B. **DO NOT** proceed with installation until any unsatisfactory conditions have been corrected. Should any deficiencies exist, the Contractor, Engineer and the Owner shall be notified in writing and corrections made. Absence of such notification shall constitute Contractor's acceptance of existing substrate and site conditions.

3.03 INSTALLATION (GENERAL)

- A. General: Perform sealant work in accordance with ASTM C1193 and Sealant, Waterproofing and Restoration Institute (SWRI) Guide Specifications.
- B. Instructions: Except as modified herein, perform all phases of sealant work in accordance with manufacturer's instructions.
- C. Job Conditions: Perform sealant work in proper sequence with painting and other finish work, and only when weather, temperature, humidity, air-borne dust and other ambient conditions are favorable for the type of material being applied. Do no sealant work when temperature is below 40°F., unless specifically permitted by manufacturer's instructions.
- D. Workmanship: Employ experienced competent workers. Furnish and use proper tools, equipment, and facilities for performing the work.

3.04 SEALANT INSTALLATION

- A. Surface Preparation:
 - 1. Preparation: Make sure joint surfaces are dry, frost-free and clean. Use solvents, wire brushing, grinding, compressed air and other appropriate means to remove foreign substances and loose materials, and provide a sound base for adhesion of compounds. If surface treatments are present, test for adhesion to determine whether treatment can remain or must be removed.
 - a. Prior to installation of new silicone sealant, all existing sealant remnants and residue **must be completely removed** from the substrate to provide a clean, sound substrate surface.
 - 2. Priming: Apply primer prior to sealant applications. If primer is not required, Contractor must submit a written letter from the manufacturer stating primer is not required for each particular application.
 - 3. Protecting: Apply sealant materials as soon as possible after surface preparation. If subsequent operations are delayed, protect joints from contamination and/or recondition prepared surface as necessary.
 - 4. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
- B. Application:

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1. Materials Preparation: Make sure compounds are uniformly blended and of proper consistency. For two-part materials observe application life recommendations and discard materials which have set up or lost resilience or adhesion. Do not dilute compounds without manufacturer's specific permission. If necessary, heat materials to assist in proper placement.
2. Conditioning Substrate: Avoid contact of compound with bituminous fillers when they are incompatible. Use backup strips of closed cell plastic foam or other recommended materials to prevent such contact and/or to control joint depth according to details or manufacturer's joint depth limitations. Roll strips uniformly into joints without stretching or twisting. Where necessary for elastomeric compounds, provide polyethylene tape or other recommended bond breaker to prevent adhesion to back of joint.
3. Masking: Apply masking tape along edges of finish joints when compound is poured and under other conditions as directed when neatness is especially important. Remove tape soon after sealing and tooling.
4. Tooling: Tool filled joints to assure maximum contact and freedom from voids and to provide a smooth, neat appearance, with slightly concave surface. For light colored materials, avoid discoloration by using tool dry or by wetting only with clean water or recommended slicking agent
5. Curing & Protecting: Protect newly applied compounds until cured, in all horizontal planes, and elsewhere when damage to joint is possible. Instruct others as to recommended delay before subsequent work, such as painting, can be started.

3.05 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturer of joint sealants and of products in which joints occur.
- B. All work adjacent to sealant shall be protected where required, unless otherwise approved by the owner's representative.
- C. Drop cloths shall be provided over all horizontal surfaces liable to receive droppings of sealant operations.
- D. Misapplied sealants and droppings shall be immediately removed by methods and materials recommended in writing from the manufacturer.
- E. After material is applied and tooled, the contractor shall remove all masking and other protection, and clean up any remaining defacement caused by his work.

3.06 PROTECTION

- A. Upon completion of joint sealant work, institute appropriate protection procedures to ensure joint sealants are without deterioration or damage at time of Substantial Completion.
- B. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion.

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- C. If despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated joint sealants and reseal joints with new materials to produce joint sealant installation with repaired areas indistinguishable from original work.

END OF SECTION

SECTION 085113 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes aluminum windows for exterior locations.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for aluminum windows.
- B. Shop Drawings: For aluminum windows.
 - 1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Samples for Verification: For aluminum windows and components required, showing full range of color variations for finishes, and prepared on Samples of size indicated below:
 - 1. Exposed Finishes: 2 by 4 inches.
 - 2. Exposed Hardware: Full-size units.
- D. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of aluminum window, for tests performed by a qualified testing agency.
- B. Field quality-control reports.
- C. Sample Warranties: For manufacturer's warranties.

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1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.
- B. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.
- C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Build mockup of typical wall area as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to meet performance requirements.
 - b. Structural failures including excessive deflection, water leakage, condensation, and air infiltration.
 - c. Faulty operation of movable sash and hardware.
 - d. Deterioration of materials and finishes beyond normal weathering.
 - e. Failure of insulating glass.
 - 2. Warranty Period:
 - a. Window: 10 years from date of Substantial Completion.
 - b. Glazing Units: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain aluminum windows from single source from single manufacturer.

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2.2 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
 - 1. Window Certification: AAMA certified with label attached to each window.
- B. Performance Class: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
 - 1. Minimum Performance Class: AW.
 - 2. Air Infiltration: Maximum 0.1 cfm/sf of window area.
 - a. Test Method: ASTM E283.
 - 3. Test Pressure Differential: 6.24 psf Water Leakage: None, with 12 psf minimum test pressure difference.
 - 4. Test Method: ASTM E547 with 4 cycles of five minutes duration each and ASTM E331.
- C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.30 Btu/sq. ft. x h x deg F.
- D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.
- E. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 45.
- F. Thermal Movements: Provide aluminum windows, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change: 120 deg F ambient; 180 deg F material surfaces.

2.3 ALUMINUM WINDOWS

- A. Manufacturers: Subject to compliance with requirements, provide Kawneer North America; Series 8225TL Thermal Windows or comparable products by one of the following:
 - 1. Boyd Aluminum Manufacturing.
 - 2. DeSCo Windows.
 - 3. EFCO Corporation.
 - 4. Graham Architectural Products Corporation.
 - 5. Peerless Products Inc.
 - 6. Wausau Window and Wall Systems; Apogee Wausau Group.
 - 7. YKK AP America Inc.

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- B. Operating Types: Provide the following operating types in locations indicated on Drawings:
 - 1. Hopper: Project in.
 - 2. Fixed.
- C. Frames and Sashes: Aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.
 - 1. Thermally Improved Construction: Fabricate frames, sashes, and muntins with an integral, concealed, low-conductance thermal barrier located between exterior materials and window members exposed on interior side in a manner that eliminates direct metal-to-metal contact.
- D. Glass: Clear annealed glass, ASTM C 1036, Type 1, Class 1, q3.
 - 1. Kind: Fully tempered where indicated on Drawings.
- E. Insulating-Glass Units: ASTM E 2190.
 - 1. Glass: Comply with requirements in Section 088000 "Glazing."
- F. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- G. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.
 - 1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.
- H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
 - 1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 ACCESSORIES

- A. Subsills: Thermally broken, extruded-aluminum subsills in configurations indicated on Drawings.
- B. Column Covers: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.
- C. Interior Trim: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.
- D. Panning Trim: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

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- E. Receptor System: Two-piece, snap-together, thermally broken, extruded-aluminum receptor system that anchors windows in place.

2.5 FABRICATION

- A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
- B. Glaze aluminum windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.
- E. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.
- F. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.6 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.
- C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.
- B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.
- C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
 - 1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Testing Services: Testing and inspecting of installed windows shall take place as follows:
 - 1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502.
 - 2. Air-Infiltration Testing:
 - a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.

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- b. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.
- 3. Water-Resistance Testing:
 - a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
 - b. Allowable Water Infiltration: No water penetration.
- 4. Testing Extent: Three windows of each type as selected by Architect and a qualified independent testing and inspecting agency. Windows shall be tested after perimeter sealants have cured.
- 5. Test Reports: Prepared according to AAMA 502.
- C. Windows will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

3.4 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.
- B. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
 - 1. Keep protective films and coverings in place until final cleaning.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work Results:
 - 1. Glass and glazing for the following:
 - a. Windows.
 - b. Doors.
 - c. Storefront framing.
 - d. Glazed curtain walls.
 - 2. Glazing sealants and accessories.
- B. Principal Products:
 - 1. Float glass.
 - 2. Fully tempered float glass.
 - 3. Insulating glass.

1.2 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria.

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1.5 INFORMATIONAL SUBMITTALS

- A. Qualifications: Installer NACC Certificate or written quality management system.
- B. Product Test Reports: For insulating glass and glazing sealants, for tests performed by a qualified testing agency.
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
- C. Preconstruction adhesion and compatibility test report.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
- B. Installer Qualifications: NACC Certified or entity with written quality management system, approved by business owner, documenting home office, shop, and field procedures and operations to ensure compliance with Contract requirements.
- C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- E. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Install glazing in mockups specified to match glazing systems required for Project, including glazing methods.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
 - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 - 2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 - 3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
 - 4. Schedule enough time for testing and analyzing results to prevent delaying the Work.

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5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.10 WARRANTY

- A. Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions.
 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide product or comparable product by one of the following:
 1. Berkowitz, JE, LP.
 2. Guardian Industries Corp.
 3. Oldcastle Building Envelope.
 4. Pilkington North America Inc.
 5. Saint-Gobain Corporation.
 6. Viracon, Inc.
 7. Vitro Architectural Glass (formerly PPG).
- B. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.

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1. Obtain tinted glass from single source from single manufacturer.
2. Obtain reflective-coated glass from single source from single manufacturer.

- C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following:

1. Defective manufacture, fabrication, or installation.
2. Failure of sealants or gaskets to remain watertight and airtight.
3. Deterioration of glazing materials; or other defects in construction.

- B. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazing.

- C. Structural Performance: Provide glazing capable of withstanding design loads within limits and under conditions indicated.

1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
 - a. Wind Design Data: As indicated on Drawings.
2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.

- D. Windborne-Debris-Impact Resistance: Exterior glazing shall comply with basic-protection testing requirements in ASTM E 1996 for Wind Zone 1 when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on Project and shall be installed in same manner as glazing indicated for use on Project.

1. Large-Missile Test: For glazing located within 30 feet of grade.
2. Small-Missile Test: For glazing located more than 30 feet above grade.

- E. Air Blast Resistance: Resist 6 psi for 41 milliseconds when tested in accordance with ASTM F1642 and meeting GSA/ISC Condition 3a High Protection Level.

1. Glass cracks. Glass fragments land of floor 3.3 feet maximum distance from opening.

- F. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

- G. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.

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4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 1. GANA Publications: "Glazing Manual."
 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
 1. Minimum Glass Thickness for Exterior Lites: 6 mm.
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.
- B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- C. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

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1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.5 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
 1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
 2. Spacer: Manufacturer's standard spacer material and construction .
 3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.6 GLAZING SEALANTS

- A. General:
 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.

2.7 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

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- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.9 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces .
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

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3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant where indicated on Drawings.
- G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

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3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 MONOLITHIC GLASS SCHEDULE

- A. Glass Type : Clear annealed float glass.
 - 1. Minimum Thickness: 6 mm.
- B. Glass Type : Clear heat-strengthened float glass.
 - 1. Minimum Thickness: 6 mm.
 - 2. Safety glazing required.
- C. Glass Type : Clear fully tempered float glass.
 - 1. Minimum Thickness: 6 mm.
 - 2. Safety glazing required.

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3.9 INSULATING GLASS SCHEDULE

- A. Glass Type : Clear insulating glass.
 - 1. Overall Unit Thickness: 1 inch.
 - 2. Minimum Thickness of Each Glass Lite: 6 mm.
 - 3. Outdoor Lite: Fully tempered float glass.
 - 4. Interspace Content: Air or Argon as required to meet performance requirements.
 - 5. Indoor Lite: Fully tempered float glass.
 - 6. Safety glazing required.

- B. Glass Type : Low-E-coated, clear insulating glass.
 - 1. Overall Unit Thickness: 1 inch.
 - 2. Minimum Thickness of Each Glass Lite: 6 mm unless otherwise indicated.
 - 3. Outdoor Lite: Fully tempered float glass.
 - 4. Interspace Content: Air or Argon as required to meet performance required.
 - 5. Indoor Lite: Fully tempered float glass.
 - 6. Low-E Coating: Pyrolytic on second surface.
 - 7. Safety glazing required.

END OF SECTION

SECTION 090511 - CONCRETE FLOOR PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Mechanical cleaning of new and existing concrete floor surfaces for application of the following finishes:
 - a. Sealers.
 - b. Coatings.
 - c. Polymer overlays.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
 - 1. Review conditions affecting substrate preparation.
 - 2. Review procedures that will be used for substrate preparation.
 - 3. Require attendance by finish flooring installers to review preparation requirements of floor finish product and flooring adhesive manufacturers

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of mechanical cleaning equipment used on the project.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.
 - 1. Submit report of observations.
 - 2. Certify installation is complete in accordance with manufacturer's instructions.
 - 3. Indicate supplementary instructions provided for Project specific conditions.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained in the use of the equipment and techniques required to produce the specified results.

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PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify new concrete floors have cured minimum 28 days.
- B. Examine substrates, with Installer present, for compliance with requirements for surface contamination, damage, and other conditions affecting performance of the Work.
- C. Examine substrate to determine repairs required to restore substrate surface to be within tolerances required for floor finishes specified in other sections, prior to completing Work of this section.
- D. Examine substrate to verify surfaces prepared in accordance with this section will be suitable for application of finishes specified in other sections.
- E. Prepare written report, endorsed by Installer, listing conditions detrimental to performance with recommendations for methods and materials required to correct conditions before proceeding with work of this section.
- F. Proceed with surface preparation only after unsatisfactory conditions have been corrected.
 - 1. Proceeding with surface preparations indicates acceptance and of surfaces and conditions of substrate.

3.2 SURFACE PREPARATION EQUIPMENT

- A. Mechanical Cleaning Equipment: Automatic, dry shot blast type, self contained capable of recycling blast materials and collecting surface abrasions.

3.3 SURFACE PREPARATION

- A. Mechanically clean concrete substrate and create surface profile in existing concrete substrate in accordance with ASTM D 4259.
 - 1. Mechanically clean concrete substrate to remove surface and penetrating contaminants to produce a surface profile of ICRI CSP 3 in accordance with ICRI Technical Guideline No. 310.2.
 - 2. Acceptable substrate surfaces will be free of laitance, oil, grease, flooring adhesive, paint, and other surface contaminants capable of affecting bond of specified floor finishes to concrete substrate.
- B. Repair surface irregularities after cleaning.
 - 1. Fill bugholes, spalls, cracks, deteriorated joints and other surface damage exposed or created as a result of substrate cleaning operations flush with adjacent surfaces to provide sound substrate for specified floor finish.

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- C. Dry broom or vacuum clean concrete substrates immediately before application of specified floor finishes in accordance with ASTM D 4258 to remove loose materials on substrate surface.
- D. When field quality control report indicates portions are unsatisfactory, repeat process until field quality control report indicates there are no unsatisfactory portions remaining.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:
 - 1. Visual inspection of completed substrate preparation to verify contamination is removed.
 - 2. Visual inspection of completed substrate preparation to verify surface profile matches ICRI CSP 3, using ICRI standard rubber mold for visual comparison.
 - 3. Prepare field quality control report. Clearly indicate the locations, extents, and conditions of areas where surface preparation does not conform to specified profile and cleanliness. Document observed conditions with digital photographs.
 - 4. Repeat inspections when additional surface preparation for unsatisfactory conditions indicated in the previous field quality control report.

3.5 PROTECTION

- A. Protect prepared concrete substrates from contamination. Reclean substrates that are contaminated by construction operations prior to installation of specified floor finishes.

END OF SECTION

SECTION 090512 - CONCRETE FLOOR MOISTURE CONTENT AND PH TESTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete moisture content testing using water vapor emission method.
 - 2. Concrete moisture content testing using relative humidity method.
 - 3. Concrete pH testing.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
- B. Scheduling: Schedule work to permit concrete moisture testing to be completed minimum one week and maximum 3 weeks before floor coverings are installed.
- C. Comply with the manufacturers requirements for any coverings to be applied to the finished concrete slabs.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Submit model and manufacturer for calcium chloride test kits.
 - 2. Submit data indicating model, manufacturer, and calibration record for relative humidity measuring equipment.
 - 3. Submit data for floor slab treatment products.
- B. Shop Drawings:
 - 1. Indicate test locations shown on building floor plan,

1.4 INFORMATIONAL SUBMITTALS

- A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- B. Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for concrete moisture acceptable limits.
- C. Test Reports: Report test results in chart form.
 - 1. Calcium Chloride Test Method: Indicate test dates, start/stop time, start/stop weight, weight gain in grams, water vapor emission rate, and pH levels.

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2. Relative Humidity Test Method: Indicate test dates, time, depth of test well, in-situ temperature, relative humidity and pH levels.
3. Submit record of ambient air temperature, ambient relative humidity, and floor slab surface temperature when test sites are prepared, start of test, and end of test.
4. Indicate condition of building enclosure including position of operable windows and exterior doors when test sites are prepared, start of test, and end of test.
5. Submit transcript of datalogger.
6. Indicate operational status of HVAC systems maintaining environmental condition of spaces where tests are conducted when test sites are prepared, start of test, and end of test.

1.5 QUALITY ASSURANCE

- A. Testing Agency: A qualified, independent testing agency employing ICRI Tier 2 Concrete Slab Moisture Testing Technician to perform tests.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver calcium chloride test kits to Project site in manufacturer's original, sealed packaging.
- B. Accept test kits on site. Inspect test kits for damage. Replace damaged test kits.

1.7 FIELD CONDITIONS

- A. Ambient Conditions:
 1. Do not perform concrete moisture testing until building is enclosed and HVAC system is operational.
 2. Maintain building test areas at design operating conditions for minimum 48 hours before, during, and continuously after conducting testing.
 3. When HVAC system is not operational at start of tests, maintain ambient conditions within test areas at 65 to 85 degrees F and 40 to 60 percent relative humidity for minimum 48 hours before, during, and continuously after conducting testing until building HVAC system is capable of maintaining design operating conditions.

PART 2 - PRODUCTS

2.1 CALCIUM CHLORIDE TEST KITS

- A. Calcium Chloride Test Kit: Comply with ASTM F1869.

2.2 RELATIVE HUMIDITY TEST EQUIPMENT

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 1. Vaisala www.vaisala.com.

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- B. Humidity and Temperature Probe and Meter: Comply with ASTM F2170.

2.3 pH TEST MATERIALS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Micro Essential Laboratory www.microessentiallab.com.
- B. pH Test Paper: Capable of indicating minimum 7.0 to 13 pH range.
- C. pH Color Gage: Furnish pH test paper manufacturer's visual color gage to identify measured pH.
- D. Water: Distilled or deionized.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify new concrete floors have cured minimum 28 days.

3.2 PREPARATION

- A. When a building HVAC system is not operational and maintaining test areas at design operational conditions, install recording hygrometer or data logger in each separate test area to record ambient temperature and relative humidity beginning 48 hours before start of tests until completion of tests within each area.
- B. Identify three moisture test sites for first 1,000 sf and one moisture test site for each additional 1,000 sf of floor area receiving floor covering on each separate floor slab.
 - 1. Layout test site locations uniformly distributed throughout each test area.
- C. Mechanically clean each test site to remove oils, laitance, curing compounds, adhesives, and other contaminants affecting water vapor emissions.
 - 1. Remove cleaning residue.
 - 2. Do not apply water or other liquid to floor slabs and test sites.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform concrete moisture tests and inspections and prepare test reports.
- B. Acceptance Criteria:
 - 1. Concrete floor slabs will be considered acceptable for installation of floor finishes when:
 - a. Calcium Chloride Test Result: 3 lb of water/1000 sf in 24 hours maximum moisture vapor transmission rate.

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- b. Relative Humidity Test Result: 75 percent maximum relative humidity.
 - c. pH Test Result: Within alkalinity range of 7.0 to 9.0.
 - 2. When concrete floors do not meet acceptance criteria, obtain recommendations from floor finish manufacturers for remediation measures necessary to permit successful floor finish installation.
- C. Concrete Moisture Testing – General
 - 1. Conduct calcium chloride test and relative humidity test at each test site.
 - 2. Conduct one pH test at each test site.
- D. Calcium Chloride Testing:
 - 1. Perform tests in accordance with ASTM F1869.
- E. Relative Humidity Testing:
 - 1. Perform tests in accordance with ASTM F2170.
 - 2. Conduct relative humidity testing at the following depths:
 - a. Slabs-On-Grade: Measure temperature and relative humidity at 40 percent of slab thickness measured from top surface.
 - b. Elevated Slabs: Measure temperature and relative humidity at 20 percent of slab thickness measured from top surface.
 - 3. Drill test hole at each test site to accommodate test sleeve.
 - a. Hole Diameter: In accordance with test equipment manufacturer's instructions.
 - b. Drilling Fluids: Not permitted.
 - 4. Vacuum dust and debris from test hole.
 - 5. Insert sleeve, to the full depth of test hole. Cap or plug sleeve to prevent test hole contamination.
 - 6. Permit the test site to acclimate for minimum 72 hours before measuring relative humidity.
 - 7. Remove sleeve plug and insert probe to bottom of test hole. Allow test probe to reach temperature equilibration with concrete slab.
 - 8. Measure and record temperature and relative humidity at the test site.
- F. pH Testing:
 - 1. Place several drops of water onto the concrete surface to form a puddle approximately 1 inch in diameter.
 - 2. Allow the water to set for approximately 60 seconds
 - 3. After 60 seconds, dip the pH paper into the water and remove immediately, compare color to chart provided by paper supplier to determine pH reading.
 - 4. Record and report results.

END OF SECTION

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092423 – STUCCO REPAIRS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide all labor, materials, equipment and related items necessary to complete all stucco work as indicated on the Drawings and described in this Specification.
- B. The scope of work includes, but is not limited to:
 - 1. Localized existing stucco repairs.
 - 2. Preparation and application of a 2-coat, hand-applied stucco finish to match existing pattern.

1.02 RELATED WORK

- A. Section 03 0130: *Concrete Rehabilitation*
- B. Section 04 0100: *Masonry Rehabilitation*
- C. Section 07 9200: *Joint Sealants*

1.03 REFERENCE STANDARDS

- A. All references indicated in the following paragraphs shall be the current editions.
 - 1. ASTM C926 - Application of Portland-Cement Based Plaster.
 - 2. Portland Cement Plaster Material
 - 3. International Concrete Repair Institute

1.04 SUBMITTALS

- A. Submit product and technical data for each product specified.
- B. The Contractor shall prepare two sample panels of each finish, at least 12 inches square showing the color, texture and full range of variations expected in the work. Upon acceptance the panel will serve as a quality standard for all similar work.

1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer Qualifications: Company with minimum 15 years of experience in manufacturing of specified products and systems.
 - 2. Applicator Qualifications: Company with minimum of 5 years experience in application of

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specified products and systems on projects of similar size and scope and is acceptable to product manufacturer.

- a. Successful completion of a minimum of 5 projects of similar size and complexity to specified work.

B. Field Sample:

1. Install at project site on pre-selected area of building an area for field sample, minimum 3 feet by 3 feet, using specified system.
 - a. The field sample shall include:
 - 1) Sample surface preparation
 - 2) Finish coating application
 - 3) Stucco coating
 - 4) Sealant
2. Apply material in strict accordance with manufacturer's written application instructions.
3. Manufacturer's representative or designated representative will review technical aspects, surface preparation, repair and workmanship. Manufacturer's representative shall issue a letter stating the materials used are compatible and appropriate.
4. Sample panel accepted by the Owner and Engineer shall serve as a quality standard for all other similar work on the same building. Contractor to retain sample panels during construction in an undisturbed condition. Legally dispose of sample panels upon completion of the work.
5. Maintain field sample during construction for workmanship comparison.
6. Do not alter, move or destroy field sample until work is completed and accepted by Engineer.
7. Obtain Engineer's written acceptance of field sample before start of material application, including acceptance of aesthetics, color, texture and appearance.

- C. Preconstruction Field-Adhesion Testing: Clean and prepare substrate. Mix small quantity of stucco and additive to apply to properly prepared substrate. Allow to cure a minimum of 5 days. Attempt to remove with hammer and chisel. If stucco delaminates from substrate in large pieces, surface preparation was inadequate. Additional surface preparation and testing must be done until accepted by the Engineer.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver manufactured materials in the manufacturers' original unbroken packages or containers which are labeled plainly with the manufacturers' names and brands.
- B. Keep materials dry and stored off the ground, under cover, and away from sweating walls and other damp surfaces until ready for use.
- C. Protect materials from weather, direct sunlight, surface contamination, aging, corrosion and damage

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from construction traffic and other causes.

1.07 ENVIRONMENTAL CONDITIONS

A. Cold Weather Requirements:

1. Maintain an ambient temperature of not less than 40 degrees F continuously where stucco work will be performed. Maintain this temperature for not less than 48 hours prior to the application of plaster, while performing stucco, and during the curing operation.
2. Do not apply stucco when ambient or wall substrate temperature is below 40 deg F. Do not apply material if it is raining or snowing, or if such condition appears to be imminent.
3. Do not apply stucco coating when ambient or wall substrate temperature is below 50°F.
4. Provide heat and protection, temporary or permanent, as required to protect stucco from freezing.

B. Hot Weather Requirements: Protect plaster against uneven and excessive evaporation when plastering work will be performed. Apply and cure plaster to prevent drying out during curing period. Provide suitable coverings, moist curing and other methods to deflect sunlight and wind as required.

C. Protection: During the application of the finish coat, and for a period of 48 hours following the completion of finish coat application for any given area, protect the surface of the plaster from direct sunlight and direct winds. Use of tarpaulins or other temporary means are acceptable. Moist cure all stucco.

1.08 WARRANTY

- ##### A.
- Provide a written warranty from the manufacturer against material defects such as cracking, delamination or blistering for a period of five years beginning with date of substantial completion. Warranty shall include all access and protection costs to make such repairs.

PART 2 - PRODUCTS

2.01 ACCESSORIES

- ##### A.
- General: Comply with material provisions of ASTM C1063 and the requirements indicated below; coordinate depth of accessories with thickness and number of plaster coats required.

1. Galvanized Steel Components: Fabricated from zinc-coated (galvanized) sheet steel complying with ASTM A653, G40. Components shall have a minimum 0.0172 inch thickness.

B. Corner Beads: Small nose cornerbeads with expanded flanges allowing full plaster encasement.

C. Casing Beads & Weep Screeds: Square-edge style, with expanded flanges.

- ##### D.
- Accessory Attachment Devices: Material and type required by ASTM C1063 for installations indicated.

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2.02 PLASTER MATERIALS

- A. Portland Cement: Cement shall be ASTM C 150, Type I.
 - 1. Use one brand and type of cement throughout Project unless otherwise specified.
 - 2. Color: Grey
- B. Hydrated Lime: Special hydrated Lime for finishing purposes, conforming to ASTM C 206, Type S.
- C. Sand for Basecoat to conform to ASTM C897.
- D. Sand for Finish Coats: Natural color and graded within the limits shown above for basecoat, except that the sand shall pass the No. 8 sieve, and for smooth finish the sand shall pass the No. 30 sieve.
- E. Water: Mixing water shall be fresh, clean and drinkable.

2.03 MISCELLANEOUS MATERIALS

- A. Line Wire: 0.0475 inch diameter, zinc-coated (galvanized), soft, annealed steel wire.
- B. Tapcon screws for fastening metal accessories to concrete masonry units (cmu).

2.04 PROPORTIONING AND MIXING

- A. General: Comply with ASTM C926 for base and finish coat mixes as applicable to plaster bases, materials and other requirements.
- B. Unless specified otherwise, materials are specified on a volume basis and shall be measured in approved containers, which will ensure that the specified proportions will be controlled and accurately maintained during the progress of the work.
- C. Measuring materials with shovels will not be permitted.
- D. Portland Cement Plaster Basecoat & Finish Coat:
 - 1. Mix all (scratch, brown & finish) coats in the proportion of 1 part binder to 4 parts damp loose sand. Binder shall consist of 8 parts Portland cement and 1 part hydrated lime.
 - 2. Finish coat finish shall match existing and be based on accepted mockup.

2.05 CURING

- A. Moist cure using a fine fog spray of water.

PART 3 - EXECUTION

3.01 INSTALLATION OF SUPPLEMENTARY MATERIALS, GENERAL

- A. Install supplementary framing, blocking and bracing at terminations in work and for support of fixtures and similar work to comply with applicable published recommendations of “Gypsum

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Construction Handbook” published by United States Gypsum Company.

3.02 SURFACE PREPARATION

- A. Clean surfaces to receive plaster of projections, dust, loose particles, grease, bond breakers, and foreign matter.
- B. Before plaster work starts, wet masonry and concrete surfaces thoroughly with a fine fog spray of clean water to produce a uniformly moist condition. Determine and apply amount of moisture and degree of saturation that will result in optimum suction for plastering.
- C. Install temporary grounds and screeds to ensure accurate rodding of plaster to true surfaces; coordinate with scratch-coat work.
- D. Check that metal accessories are securely attached to supporting structure prior to the start of work. Check metal grounds, corner beads, screeds, and other accessories carefully for alignment before starting work.

3.03 INSTALLATION OF PLASTERING ACCESSORIES

- A. Comply with referenced standards for provision and location of plaster accessories of type indicated. Miter or cope accessories at corners; install with tight joints and in alignment.
- B. Attach accessories securely to plaster bases to hold accessories in place and in alignment during plastering.
 - 1. External Corners: Install corner reinforcement at external corners.
 - 2. Terminations in Plaster: Install casing beads, unless otherwise indicated.
 - 3. Control Joints: Install at locations indicated and at locations complying with the following criteria:
 - a. Where an expansion or contraction joint occurs in the surface of construction directly behind plaster membrane.

3.04 APPLICATION, GENERAL

- A. Application and Slump:
 - 1. Apply plaster materials, composition and mixes to comply with ASTM C926.
 - 2. Plaster may be applied by hand or by machine. When a plastering machine is used, control the fluidity of Portland cement-lime plaster to have a slump of not more than 2 1/2 inches when tested using a 2- by 4- by 6-inch high slump cone.
 - 3. Subsequent to determining water content to meet the specified slump, do not add additional water to the mix.
- B. Conduct the slump test according to the following procedure:
 - 1. Place cone on level, dry, non-absorptive base plate.

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2. While holding cone firmly against base plate, fill cone with plaster taken directly from the hose or nozzle of the plastering machine, tamping with metal rod during filling to release air bubbles.
3. Screed off plaster level with top of cone. Remove cone by lifting it straight up with a slow and smooth motion.
4. Place cone in a vertical position adjacent to freed plaster sample, using care not to jiggle base plate.
5. Lay a straightedge across top of cone, being careful not to vibrate cone. Measure slump in inches from the bottom edge of the straightedge to the top of the slumped plaster sample.

3.05 MIXING

- A. Mix materials in approved mechanical mixers of the type in which the quantity of water can be controlled accurately and uniformly, except that finish coats containing lime may be hand mixed. While the mixer is in continuous operation, add approximately 90 percent of the estimated quantity of water, half of the sand, and all of the cementitious materials. Introduce the other one-half of the sand into the mixer in that same sequence and mix thoroughly with the remainder of the water until the mixture is uniform in color and consistency. Avoid excessive mixing and agitation.
- B. Discard plaster which has begun to set before it is used; retempering will not be permitted.
- C. Do not use frozen, caked, or lumped, dirty or contaminated materials.
- D. Empty mixers and mixing boxes after each batch is mixed and keep free of old plaster.

3.06 WORKMANSHIP

- A. Apply base coats with sufficient pressure and ensure plaster is sufficiently plastic to provide a strong bond to bases. Plaster shall not be continuous across expansion and control joints.
- B. Finish plaster work level, plumb, square, and true, within a tolerance of 1/8 inch in 8 feet, without waves, cracks, blisters, pits, crazing, discoloration, projections, or other imperfections. Form plaster work carefully around angles and contours, and well-up to screeds.
- C. Take special care to prevent sagging and consequent dropping of applications. There shall be no visible junction marks in finish coat where one day's work adjoins another.

3.07 INSTALLATION OF PLASTER

- A. Apply base coats with sufficient pressure to curl the keys around the back of plaster accessories.
- B. Apply in two coats to a total thickness of 1/2" to 5/8".
- C. Apply the base coat to a thickness not less than 3/8" after the consolidant has cured. Apply to bring the base coat out to the screeds, compact and straighten to a true surface with rod and darby, and float to receive the finish coat.
- D. After the base coat has been moist cured for not less than 24 hours and aged at least an additional 5 days, apply the finish coat to a thickness of not less than 1/8 inch. Where previous coat has become

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dry, dampen the surface evenly with water, prior to the application of the next coat.

- E. The finish coat for plaster shall fine sand finish.
- F. Moist cure plaster for 24 hours using a fine fog spray of water and apply to the finish coat as frequently as required to prevent dry-out of the plaster. Do not saturate the plaster to the point where free water stands on the surface. Prevent staining the finish coat.

3.08 PATCHING AND POINTING

- A. Upon completion of work, cut out and patch loose, cracked, indented, damaged, or defective plaster. Match patching of existing work in texture, color and finish flush with plaster previously applied.
- B. Point and patch plastered surfaces abutting or adjoining other finish work in a neat manner. Remove plaster droppings or splatterings from surfaces.
- C. Repair or replace work to eliminate blisters, buckles, check cracking, dry outs, efflorescence, excessive pinholes and similar defects. Match patching of existing work in texture, color and finish flush with plaster previously applied.

3.09 CLEANING AND PROTECTION

- A. Remove protective covering and other provisions from floors and other surfaces. Repair surfaces stained, marred or otherwise damaged during plastering work.
- B. Upon completion of work, remove all unused materials, containers, equipment, rubbish and debris from the project site.
- C. Provide final protection and maintain conditions, in a manner acceptable to Manufacturer and Installer, that ensure the plaster work is without damage or deterioration at time of Substantial Completion.

END OF SECTION

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SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for ceilings.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.
- C. Samples for Initial Selection: For components with factory-applied color finishes.
- D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panel: Set of 6-inch-square Samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch-long Samples of each type, finish, and color.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Suspended ceiling components.
 - 2. Structural members to which suspension systems will be attached.
 - 3. Size and location of initial access modules for acoustical panels.
 - 4. Items penetrating finished ceiling including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - 5. Perimeter moldings.
- B. Qualification Data: For testing agency.

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- C. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.
- D. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.
- E. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
 - 2. Smoke-Developed Index: 50 or less.
- C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

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

2.2 ACOUSTICAL PANELS, GENERAL

A. Source Limitations:

1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
2. Suspension System: Obtain each type from single source from single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.

C. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.

D. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.

E. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.3 ACOUSTICAL PANELS

A. Basis-of-Design Product: Subject to compliance with requirements, provide products indicated on Drawings or comparable products by one of the following:

1. CertainTeed Corp.
2. Chicago Metallic Corporation.
3. Tectum Inc.
4. USG Interiors, Inc.; Subsidiary of USG Corporation.

B. Color: As indicated on Drawings.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.

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- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
 - a. Type: Postinstalled expansion or Postinstalled bonded anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
 - c. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 Alloy 304 or 316 for bolts; Alloy 304 or 316 for anchor.
 2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.
- C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304, nonmagnetic.
 3. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.135-inch-diameter wire.
- D. Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.
- F. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.
- G. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.

2.5 METAL SUSPENSION SYSTEM

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Prelude 15/16 inch grid manufactured by Armstrong World Industries, Inc. or comparable product by one of the following:
1. CertainTeed Corp.
 2. Chicago Metallic Corporation.
 3. USG Interiors, Inc.; Subsidiary of USG Corporation.
- B. Wide-Face, Single-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet electrolytically zinc coated, with prefinished flanges of width indicated.
1. Structural Classification: Heavy-duty system.

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2. Face Finish: Painted white.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Armstrong World Industries, Inc.
 2. CertainTeed Corp.
 3. USG Interiors, Inc.; Subsidiary of USG Corporation.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.7 ACOUSTICAL SEALANT

- A. Acoustical Sealant: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 1. Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.
- B. For tegular tiles that are cut to fit the grid, cut in a tegular notch at the cut end to replicate the manufacturer's tegular edge. Paint the cut with the panel manufacturer's paint.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 - 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 - 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 - 8. Do not attach hangers to steel deck tabs.
 - 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - 10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 - 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

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1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 2. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 3. Install hold-down impact clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Thermoset-rubber base.
 - 2. Vinyl Base
 - 3. Rubber stair treads and landings

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Initial Selection: For each type of product indicated.
- C. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

1.3 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Coordinate mockups in this Section with mockups specified in other Sections.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

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1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL BASE

- A. Location: to be used in locations where it will be in a room adjacent to existing vinyl base.
- B. Manufacturers: Subject to compliance with requirements, provide products indicated on Finish Schedule on Drawings or comparable product by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. Burke Mercer Flooring Products, Division of Burke Industries Inc.
 - 3. Flexco.
 - 4. Johnsonite; A Tarkett Company.
- C. Product Standard: ASTM F 1861, Type TV (vinyl, thermoplastic).
 - 1. Group: I (solid, homogeneous).
 - 2. Style and Location: Cove: Provide in areas with resilient flooring and carpet
- D. Minimum Thickness: 0.125 inch unless otherwise indicated.
- E. Height: 4 inches.
- F. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length.
- G. Outside Corners: Job formed.
- H. Inside Corners: Job formed.
- I. Colors and Patterns: As indicated on Finish Schedule in Drawings.

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2.2 THERMOSET RUBBER BASE

- A. Location: to be used in rooms where all new base will be provided, or in locations where it will be installed adjacent to existing rubber base.
- B. Manufacturers: Subject to compliance with requirements, provide products indicated on Finish Schedule on Drawings or comparable product by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. Burke Mercer Flooring Products, Division of Burke Industries Inc.
 - 3. Flexco.
 - 4. Johnsonite; A Tarkett Company.
- A. Product Standard: Product Standard: ASTM F 1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
 - 1. Style and Location: Cove: Provide in areas with resilient flooring and carpet
- B. Minimum Thickness: 0.125 inch unless otherwise indicated.
- C. Height: 4 inches.
- D. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length.
- E. Outside Corners: Job formed.
- F. Inside Corners: Job formed.
- G. Colors and Patterns: As indicated on Finish Schedule in Drawings.

2.3 RUBBER STAIR ACCESSORIES

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. Manufacturers: Subject to compliance with requirements, provide Basis of Design products indicated in Finish Schedule on Drawings or comparable products by one of the following:
 - 1. AB; American Biltrite.
 - 2. Allstate Rubber Corp.
 - 3. Armstrong World Industries, Inc.
 - 4. Burke Mercer Flooring Products, Division of Burke Industries Inc.
 - 5. Johnsonite; A Tarkett Company.
 - 6. Mondo Rubber International, Inc.
 - 7. Musson Rubber Company.
 - 8. R.C.A. Rubber Company (The).
 - 9. Roppe Corporation, USA.
 - 10. VPI, LLC, Floor Products Division.

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- C. Stair Treads: ASTM F 2169.
 - 1. Type: TS (rubber, vulcanized thermoset) or TP (rubber, thermoplastic).
 - 2. Class: 1 (smooth, flat).
 - 3. Group: 2 (with contrasting color for the visually impaired).
 - 4. Nosing Style: Square, unless indicated otherwise.
 - 5. Nosing Height: 2 inches unless otherwise indicated.
 - 6. Thickness: 1/4 inch and tapered to back edge.
 - 7. Size: Lengths and depths to fit each stair tread in one piece unless otherwise indicated.
 - 8. Integral Risers: Smooth, flat; in height that fully covers substrate.
- D. Stringers: Height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
 - 1. Thickness: 0.125 inch.
- E. Landing Tile: Matching treads; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
- F. Locations: Provide rubber stair accessories in areas indicated.
- G. Colors and Patterns: As selected by Architect from full range of industry colors.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
- C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.
- D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Proceed with application only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

- A. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- B. Do not install resilient products until they are the same temperature as the space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- C. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
 - a. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
 - a. Miter or cope corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:

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1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
2. Tightly adhere to substrates throughout length of each piece.
3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
 1. Remove adhesive and other blemishes from exposed surfaces.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.
 1. Apply polish as recommended by manufacturer.
- E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Vinyl composition floor tile.
 - 2. Rubber floor tile.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 1. Show details of special patterns.
- C. Samples for Verification: Full-size units of each color and pattern of floor tile required.
 - 1. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.
- D. Product Schedule: For floor tile.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

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1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 VINYL COMPOSITION FLOOR TILE (VCT)

- A. Basis of Design Manufacturer: Subject to compliance with requirements, provide products as indicated in Finish Schedule comparable product by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. AB; American Biltrite.
 - 3. Congoleum Corporation.
 - 4. Mannington Mills, Inc.
- B. Tile Standard: ASTM F 1066 tile.

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2.3 RUBBER FLOOR TILE, RT-1

- A. Basis of Design Products: Subject to compliance with requirements, provide products indicated in Finish Schedule on Drawings.
 - 1. Mannington Mills, Inc. (Basis of Design)
 - 2. AB; American Biltrite.
 - 3. Flexco.
 - 4. Johnsonite; A Tarkett Company.
 - 5. Mondo Rubber International, Inc.
 - 6. Nora Rubber Flooring, Freudenberg Building Systems, Inc.
 - 7. PRF USA Inc.
 - 8. Roppe Corporation, USA.
 - 9. VPI, LLC, Floor Products Division.
- B. Construction: ASTM F 1344, Grade 1, Type B. High resiliency thermoset rubber plank and tile.
- C. Size: 17.5 inches by 35 inches, unless otherwise indicated.
- D. Overall Thickness: 1/8 inch.
- E. Profile: Smooth.
- F. Static Load Limit: ASTM F970 mod. 1,500 p.s.i. residual indent $\leq 0.005''$
- G. Slip Resistance ASTM C1028, dry – Passes 0.6 Rubber
- H. Floor Radiant Panel (ASTM E648, Smoke – Passes Class 1
- I. Installation Method: One direction, unless otherwise indicated.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work as specified in Division 09 Section "Concrete Floor Preparation."
 - 1. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates:
 - 1. Prepare substrate according Division 09 Section "Concrete Floor Preparation."

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles in pattern indicated.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles with grain running in one direction.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

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- H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.
 - 1. Apply one coat(s).
- E. Cover floor tile until Substantial Completion.

END OF SECTION

SECTION 096623 - RESINOUS MATRIX TERRAZZO FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Thin-set, epoxy-resin terrazzo flooring and base.
 - 2. Precast epoxy-resin terrazzo units.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include terrazzo installation requirements. Include plans, elevations, sections, component details, and attachments to other work. Show layout of the following:
 - 1. Divider strips.
 - 2. Control-joint strips.
 - 3. Abrasive strips.
 - 4. Terrazzo patterns.
- C. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare Samples of same thickness and from same material to be used for the Work, in size indicated below:
 - 1. Terrazzo: 6-inch- square Samples.
 - 2. Accessories: 6-inch- long Samples of each exposed strip item required.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type of terrazzo material or product, from manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For terrazzo to include in maintenance manuals.

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1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Engage an installer who is a contractor member of NTMA.
- B. Source Limitations: Obtain primary terrazzo materials from single source from single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.
- C. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of granular materials from single source with resources to provide materials of consistent quality in appearance and physical properties.
- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups for terrazzo including accessories.
 - a. Size: Minimum 100 sq. ft. of typical poured-in-place flooring and base condition for each color and pattern in locations directed by Architect.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source's or manufacturer's name, material or product brand name, and lot number if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.
- B. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.
- C. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.
- D. Provide all necessary temporary electrical needed for terrazzo installation, if permanent/existing electrical does not exist or meet needs for installation.
- E. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

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- F. Control and collect water and dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NTMA Standards: Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.2 EPOXY-RESIN TERRAZZO

- A. Epoxy-Resin Terrazzo: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and aggregate proportions and mixing.
 - 1. Products: Subject to compliance with requirements, provide product as indicated on Finish Schedule on Drawings or comparable one from of the following:
 - a. Terrazzo & Marble Supply Companies; Terroxy Resin Systems.
 - b. Crossfield Products Corp., Dex-O-Tex Division; Cheminert.
 - c. General Polymers; Sherwin Williams; Terrazzo 1100.
 - d. Key Resin Company; Key Epoxy Terrazzo.
 - e. Master Terrazzo Technologies LLC; Morricite.
 - f. Quadrant Chemical Corporation; Quadset Epoxy Terrazzo.
 - g. TEC Specialty; H.B. Fuller Construction Products Inc; Tuff-Lite Epoxy Terrazzo.
 - 2. Thickness: 1/2 inch nominal.
 - 3. Formulated Mix Color and Pattern: See Finish Schedule.
- B. Materials:
 - 1. Flexible Reinforcing Membrane: Manufacturer's resinous membrane for substrate-crack preparation and reflective-crack reduction.
 - a. Reinforcement: Fiberglass scrim.
 - 2. Primer: Manufacturer's product recommended for substrate and use indicated.
 - 3. Epoxy-Resin Matrix: Manufacturer's standard recommended for use indicated and in color required for mix indicated.
 - a. For Epoxy Matrix blended with three volumes of Valders marble blended 60% #1 chip and 40% #0 chip, ground and grouted with epoxy resin according to Installation Specifications, finishing to a nominal 3/8" (9.5 mm) thickness. All specimens cured for 7 days at 73-77°F (22.8-25°C) and 50 percent RH plus or minus 2 percent RH.
 - 4. Aggregates: Comply with NTMA gradation standards for mix indicated and contain no deleterious or foreign matter.
 - a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131.
 - b. 24-Hour Absorption Rate: Less than 0.75 percent.
 - c. Dust Content: Less than 1.0 percent by weight.
 - 5. Finishing Grout: Epoxy Matrix or Clear Resin with a broadcast of limestone filler as recommended by manufacturer..

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2.3 PRECAST EPOXY-RESIN TERRAZZO

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products as indicated on Finish Schedule on Drawings or comparable product by one of the following:
 - 1. Precast Terrazzo Enterprises, Inc.
 - 2. Romoco Precast Terrazzo Products.
- B. Precast Terrazzo Units: Comply with NTMA's written recommendations for fabricating precast terrazzo units in sizes and profiles indicated. Reinforce units as required by unit sizes, profiles, and thicknesses and as recommended by manufacturer. Finish exposed-to-view edges and reveals to match face finish. Ease exposed edges to 1/8-inch radius.
 - 1. Precast Terrazzo Base Units: 1/4 inches thick, cast in maximum lengths possible, but not less than 36 inches.
 - a. Type: Square
 - b. Height: 4 inches.
 - c. Outside Corner Units: With finished returned edges at outside corner.
 - 2. Precast Terrazzo Stair Treads: Thickness indicated with cast-in nosing.
 - a. Tread/Riser: 1/2 inch thick epoxy, with abrasive strips.
 - 3. Color, Pattern, and Finish: As indicated on Finish Schedule on Drawings.

2.4 STRIP MATERIALS

- A. Thin-Set Divider Strips: L-type angle, 3/8 inch deep.
 - 1. Material: Aluminum.
 - 2. Top Width: 1/8 inch .
- B. Top-Section Width: As indicated
- C. Control-Joint Strips: Separate, double L-type angles, positioned back to back, that match material and color of divider strips and in depth required for topping thickness indicated.
- D. Abrasive Strips: Three-line abrasive inserts at nosings, unless otherwise indicated. Silicon carbide or aluminum oxide, or combination of both, in epoxy-resin binder and set in channel.
 - 1. Width: 1/2 inch.
 - 2. Depth: As required by terrazzo thickness.
 - 3. Length: As indicated.
 - 4. Color: Match Architect's sample.
- E. Reducer Strip: Provide Schluter Reno-U as indicated on Drawings.

2.5 MISCELLANEOUS ACCESSORIES

- A. Strip Adhesive: Epoxy-resin adhesive recommended by adhesive manufacturer for this use.
- B. Crack Reduction Flexible Reinforcing Membrane:

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1. Basis of Design: Iso-Crack Epoxy Membrane or approved comparable product,
- C. Anchoring Devices:
 1. Precast Terrazzo: Provide mechanical anchoring devices as recommended by fabricator for proper anchorage and support of units for conditions of installation and support.
- D. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- E. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- F. Resinous Matrix Terrazzo Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.
- G. Sealer: Slip- and stain-resistant, penetrating-type sealer that is chemically neutral; does not affect terrazzo color or physical properties; is recommended by sealer manufacturer; and complies with NTMA's "Terrazzo Specifications and Design Guide" for terrazzo type indicated.
 1. Surface Friction: Not less than 0.6 according to ASTM D 2047.
 2. Acid-Base Properties: With pH factor between 7 and 10.
 3. Basis of Design: 3M Stone Floor Protection System
3M System Components for 1000-Grit Terrazzo Care
 - a. **Honing/Polishing Phase (1000 Grit):** Use [3M Trizact Diamond TZ Abrasive Pads](#) (Blue / 1000 grit equivalent) or the [Scotch-Brite Diamond Floor Brush 1000](#) with water or a neutral cleaner to remove fine scratches and restore clarity. [[1](#), [2](#), [3](#)]
 - b. **Sealing/Protecting Phase:** Apply [Scotchgard Stone Floor Protector](#) as the high-durability finish coat, which chemically hardens and seals porous stone and terrazzo surfaces without requiring traditional plastic stripping. [[1](#), [2](#)]
- H. Moisture Mitigation: Two-component, high solids, moisture tolerant, high density, low odor, epoxy-based product produced by epoxy terrazzo resin manufacturer specifically recommended to reduce alkalinity levels and moisture emission to acceptable levels.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

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3.2 PREPARATION

- A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.
- B. Concrete Slabs:
 - 1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.
 - c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.
- C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - 1. Moisture Testing: Perform tests indicated below.
 - a. Calcium Chloride Test: Perform anhydrous calcium chloride test per ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - 1) Perform tests so that each test area does not exceed 200 sq. ft., and perform not less than two tests in each installation area and with test areas evenly spaced in installation areas.
 - b. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative-humidity-level measurement.
 - c. Test Method: Test for moisture content by method recommended in writing by terrazzo manufacturer. Proceed with installation only after substrates pass testing. If time does not allow for testing or the substrate does not pass, provide an install moisture mitigation.
- D. Protect other work from water and dust generated by grinding operations. Control water and dust to comply with environmental protection regulations.
 - 1. Erect and maintain temporary enclosures and other suitable methods to limit water damage and dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.3 EPOXY-RESIN TERRAZZO INSTALLATION

- A. Comply with NTMA's written recommendations for terrazzo and accessory installation.
- B. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."
- C. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet; noncumulative.

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- D. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
- E. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.
- F. Flexible Reinforcing Membrane:
 - 1. Prepare and prefill substrate cracks with membrane material.
 - 2. Install membrane in areas to receive terrazzo.
 - 3. Reinforce membrane with fiberglass scrim.
 - 4. Prepare membrane according to manufacturer's written instructions before applying substrate primer.
- G. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.
- H. Strip Materials:
 - 1. Divider and Control-Joint Strips:
 - a. Locate divider strips in locations indicated.
 - b. Install control-joint strips in locations indicated.
 - c. Install control-joint strips with 1/4-inch gap between strips, and install sealant in gap.
 - d. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.
 - 2. Accessory Strips: Install as required to provide a complete installation.
 - 3. Abrasive Strips: Install with surface of abrasive strip positioned 1/16 inch higher than terrazzo surface.

3.4 PRECAST TERRAZZO INSTALLATION

- A. Install precast terrazzo units using method recommended by NTMA and manufacturer unless otherwise indicated.
- B. Do not install units that are chipped, cracked, discolored, or not properly finished.
- C. Seal joints between units with joint compound matching precast terrazzo matrix unless otherwise indicated.

3.5 REPAIR

- A. Cut out and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

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3.6 CLEANING AND PROTECTION

A. Cleaning:

1. Remove grinding dust from installation and adjacent areas.
2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow them to dry thoroughly.

B. Sealing:

1. Seal surfaces according to NTMA's written recommendations.
2. Apply sealer according to sealer manufacturer's written instructions.

C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes modular carpet tile.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include installation recommendations for each type of substrate.
- B. Shop Drawings: Show the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation.
 - 6. Pattern type, location, and direction.
 - 7. Pile direction.
 - 8. Type, color, and location of insets and borders.
 - 9. Type, color, and location of edge, transition, and other accessory strips.
 - 10. Transition details to other flooring materials.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
 - 1. Carpet Tile: Full-size Sample.
 - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- long Samples.
- D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

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1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd..

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104.

1.9 FIELD CONDITIONS

- A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

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- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.10 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, excess static discharge, loss of tuft bind strength, loss of face fiber, and delamination.
 - 3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A. Basis of Design Products: See Finish Schedule on Drawings for products, including colors and patterns.
- B. Antimicrobial Treatment: Manufacturer's standard material.
 - 2. Critical Radiant Flux Classification: Not less than Class 1 0.45 W/sq. cm.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
- C. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and dimensions as indicated on Drawings..

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work as specified in Division 09 Section "Concrete Floor Preparation."

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3.2 PREPARATION

- A. General: Comply with CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Concrete Substrates:
 - 1. Prepare substrate according Division 09 Section "Concrete Floor Preparation."
 - 2. Concrete Testing: As specified in Section 090512 "Concrete Floor Moisture Content and pH Testing."

3.3 INSTALLATION

- A. General: Comply with CRI 104 Section 10, "Carpet Tile" and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Maintain dye lot integrity. Do not mix dye lots in same area.
- D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders.
- H. Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI 104, Section 11.0, "Post Installation."

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- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

SECTION 096816 - SHEET CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Broadloom carpet.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Review methods and procedures related to carpet installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

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

- 1. Include manufacturer's written data on physical characteristics and durability.
 - 2. Include manufacturer's written installation recommendations for each type of substrate.

- B. Shop Drawings: For carpet installation, showing the following:

- 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
 - 2. Carpet type, color, and dye lot.
 - 3. Locations where dye lot changes occur.
 - 4. Seam locations, types, and methods.
 - 5. Type of subfloor.
 - 6. Type of installation.
 - 7. Pattern type, repeat size, location, direction, and starting point.
 - 8. Pile direction.

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9. Types, colors, and locations of insets and borders.
 10. Types, colors, and locations of edge, transition, and other accessory strips.
 11. Transition details to other flooring materials.
 12. Type of carpet cushion.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
1. Carpet: 12-inch- (300-mm-) square Sample.
 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- (300-mm-) long Samples.
 3. Carpet Seam: 6-inch (150-mm) Sample.
- D. Samples for Initial Selection: For each type of product.
1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.
- E. Product Schedule: For carpet. Use same designations indicated on Drawings.
- F. Sustainable Product Certification: Provide ANSI/NSF 140 certification for carpet products.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet for tests performed by a qualified testing agency.
- C. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet to include in maintenance manuals. Include the following:
 1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 2. Precautions for cleaning materials and methods that could be detrimental to carpet.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Carpet: Full-width rolls equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

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1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
 - 1. Build 24" x 24" mockups at one stair location.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI's "CRI Carpet Installation Standard."
- B. Deliver carpet in original mill protective covering with mill register numbers and tags attached.

1.10 FIELD CONDITIONS

- A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.

1.11 WARRANTY

- A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, the following:
 - a. More than 10 percent loss of face fiber, edge raveling, snags, and runs.
 - b. Loss of tuft bind strength.
 - c. Excess static discharge.
 - d. Delamination.
 - 3. Warranty Period: lifetime.

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PART 2 - PRODUCTS

2.1 TUFTED CARPET

- A. as indicated on drawings

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by carpet manufacturer.
- C. Tackless Carpet Stripping: Water-resistant plywood, in strips as required to match cushion thickness and that comply with CRI's "CRI Carpet Installation Standard."
- D. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.
- E. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance.
- B. Examine carpet for type, color, pattern, and potential defects.
- C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

3.2 PREPARATION

- A. General: Comply with CRI's "CRI Carpet Installation Standard" and with carpet manufacturer's written installation instructions for preparing substrates.

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- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm), unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet manufacturers.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 CARPET INSTALLATION

- A. Comply with CRI's "CRI Carpet Installation Standard" and carpet manufacturer's written installation instructions for the following:
 - 1. Direct-glue-down installation.
 - 2. Double-glue-down installation.
 - 3. Carpet with attached-cushion installation.
 - 4. Preapplied adhesive installation.
 - 5. Hook-and-loop installation.
 - 6. Stretch-in installation.
 - 7. Stair installation.
- B. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.
 - 1. Stretch-in Carpet Installation: Install carpet cushion seams at 90-degree angle with carpet seams.
- C. Do not bridge building expansion joints with carpet.
- D. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.
- E. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet as marked on subfloor. Use nonpermanent, nonstaining marking device.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet:

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1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
 2. Remove yarns that protrude from carpet surface.
 3. Vacuum carpet using commercial machine with face-beater element.
- B. Protect installed carpet to comply with CRI's "CRI Carpet Installation Standard."
- C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods recommended in writing by carpet manufacturer.

END OF SECTION

SECTION 099000 - PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following substrates:
 - 1. Concrete masonry units (CMUs).
 - 2. Concrete
 - 3. Steel and iron.
 - 4. Galvanized metal.
 - 5. Aluminum (not anodized or otherwise coated).
 - 6. Wood.
 - 7. Plastic.
 - 8. Gypsum board.
 - 9. Acoustic panels and tiles.
 - 10. ASJ insulation covering.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and for each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Apply coats on Samples in steps to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.3 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For paint and coating products to include in Project maintenance manuals.
 - 1. Include summary description with finish schedule indicating area name, substrate, finish product, and color for each Project area.
 - 2. Include detail description indicating specific product, color, finish, purchase location, and physical color sample for each Project area.
 - 3. Include maintenance instructions for care and cleaning and touchup.
 - 4. Include product data sheets and Material Safety Data Sheets for each product used on Project.

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1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, as installed products.
 - 1. Package products with protective covering for storage and identified with labels describing contents.
 - 2. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior paints in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products in Finish Schedule or comparable products by one of the following:
 - 1. Sherwin Williams as basis of design.
 - 2. Benjamin Moore.
 - 3. Behr Process Corporation.
 - 4. PPG Paints.
 - 5. Tnemec.

2.2 PAINT, GENERAL

- A. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 150 g/L.
 - 3. Primers, Sealers, and Undercoaters: 200 g/L.

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4. Floor Coatings: 100 g/L.

B. Colors: As indicated in Finish Schedule on Drawings.

2.3 TRANSPARENT FINISH, GENERAL

- A. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing, as applicable to each unit of work.
1. Grade: Same as item to be finished.
 2. Finish: System - 12, water-based polyurethane.
 3. Staining: Match existing approved sample for color.
 4. Filled Finish for Open-Grain Woods: After staining, apply wash-coat sealer and allow to dry. Apply paste wood filler and wipe off excess. Tint filler to match stained wood.
 5. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523 to match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.
 2. Masonry (Clay and CMUs): 12 percent.
 3. Wood: 15 percent.
 4. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

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- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, mildew, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Steel Substrates: Remove rust, loose mill scale, and shop primer. Clean using methods recommended in writing by paint manufacturer.
- F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- H. Wood Substrates:
 - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - 2. Sand surfaces that will be exposed to view, and dust off.
 - 3. Prime edges, ends, faces, undersides, and backsides of wood.
 - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- I. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items, equipment, and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.

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4. Paint entire exposed surface of window frames and sashes.
 5. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 6. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 7. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

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3.6 SCHEDULE - EXTERIOR SURFACES - LATEX

A. Shop Primed Ferrous Metal - Gloss Acrylic Enamel:

1. Benjamin Moore:
 - a. Finish: Two coats DTM M-28 Acrylic Gloss, 2.0 mils dry film thickness each coat.
2. Behr:
 - a. Finish: Two coats Direct-To-Metal Gloss 8200 1.7 mils dry film thickness each coat.
3. PPG Paints:
 - a. Finish: Two coats 90-374 Pitt-Tech DTM Acrylic Gloss, 2 - 3 mils dry film thickness each coat.
4. Sherwin-Williams:
 - a. Finish: Two coats DTM Acrylic Gloss B66, 2.5 - 4.0 mils dry film thickness each coat.

B. Ferrous Metal - Gloss Acrylic Enamel:

1. Benjamin Moore:
 - a. Primer: One coat M-28 Acrylic Metal Primer; 2.0 mils dry film thickness.
 - b. Finish: Two coats M-28 Acrylic Gloss Enamel; 2.0 mils dry film thickness each coat.
2. Behr:
 - a. Primer: One coat Premium Plus Multi-Surface Primer 436. 1.7 - 2.7 mils dry film thickness.
 - b. Finish: Two coats Direct-To-Metal Gloss 8200, 1.7 mils dry film thickness each coat.
3. PPG Paints:
 - a. Primer: One coat 90-712 Pitt-Tech DTM Acrylic Primer/Finish, 2 - 3 mils dry film thickness.
 - b. Finish: Finish: Two coats Pitt-Tech DTM Acrylic Gloss, 2 - 3 mils dry film thickness each coat.
4. Sherwin-Williams:
 - a. Primer: One coat DTM Acrylic Primer/Finish B66W1, 2.5 - 5.0 mils dry film thickness.
 - b. Finish: Finish: Two coats DTM Acrylic Gloss B66, 2.5 - 4.0 mils dry film thickness each coat.

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C. Galvanized Metals - Gloss Acrylic Enamel: Pretreat as required by manufacturer.

1. Benjamin Moore:
 - a. Primer: One coat M-28 Acrylic Metal Primer; 2.0 mils dry film thickness
 - b. Finish: Two coats M-28 Acrylic Gloss Enamel; 2.0 mils dry film thickness each coat.
2. Behr:
 - a. Primer: One coat Premium Plus Multi-Surface Primer 436. 1.7 - 2.7 mils dry film thickness.
 - b. Finish: Two coats Direct-To-Metal Gloss 8200, 1.7 mils dry film thickness each coat.
3. PPG Paints:
 - a. Primer: One coat 90-712 Pitt-Tech DTM Acrylic Primer/Finish, 2 - 3 mils dry film thickness.
 - b. Finish: Finish: Two coats 90-374 Pitt-Tech DTM Acrylic Gloss, 2 - 3 mils dry film thickness each coat.
4. Sherwin-Williams:
 - a. Primer: One coat DTM Acrylic Primer/Finish B66W1, 2.5 - 5.0 mils dry film thickness.
 - b. Finish: Two coats DTM Acrylic Gloss B66, 2.5 - 4.0 mils dry film thickness each coat.

D. Wood and Plastic, Previously Painted - High Gloss Latex Enamel:

1. Benjamin Moore:
 - a. Finish: Two coats DTM Acrylic M-28; 2.0 mils dry film thickness each coat.
2. Behr:
 - a. Finish: Two coats Premium Plus Hi-Gloss 8050. 1.4 - 2.2 mils dry film thickness each coat.
3. PPG Paints:
 - a. Finish: Two coats 90-374 Pitt-Tech DTM Acrylic Gloss, 2 - 3 mils dry film thickness each coat.
4. Sherwin-Williams:
 - a. Finish: Two coats DTM Acrylic B66-100, 2.5 - 4.0 mils dry film thickness each coat.

E. Wood and Plastic, New - High Gloss Latex Enamel:

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1. Benjamin Moore:
 - a. Primer: One coat Fresh Start Exterior Primer 023; 1.8 mils dry film thickness.
 - b. Finish: Two coats DTM Acrylic M28; 2.0 mils dry film thickness each coat.
 2. Behr:
 - a. Primer: One coat Premium Plus Multi-Surface Primer 436. 1.7 - 2.7 mils dry film thickness.
 - b. Finish: Two coats Premium Plus Hi-Gloss 8050. 1.4 - 2.2 mils dry film thickness each coat.
 3. PPG Paints:
 - a. Primer: One coat Seal Grip 17-921 Acrylic Primer, 1.5 dry film thickness
 - b. Finish: Two coats 90-374 Pitt-Tech DTM Acrylic Gloss, 2 - 3 mils dry film thickness each coat.
 4. Sherwin-Williams:
 - a. Primer (Wood): One coat Exterior Oil Based Wood Primer, Y24W820, 1.5 mils dry film thickness.
 - b. PVC Plastic Primer: One coat Multi Purpose Latex Primer, B51-800; 1.5/2 mils dry film thickness.
 - c. Finish: Two coats DTM Acrylic B66-100, 2.0 mils dry film thickness each coat.
- F. Concrete - Semi-Gloss Acrylic:
1. Benjamin Moore: Concrete
 - a. Primer: One coat Acrylic Masonry Sealer 066; dry film thickness as recommended by manufacturer.
 - b. Finish: Two coats Super Spec Latex House and Trim Paint 170; 1.1 mils dry film thickness each coat.
 2. Behr:
 - a. Primer: One coat Premium Plus Multi-Surface Primer 436. 1.7 - 2.7 mils dry film thickness.
 - b. Finish: Two coats Behr Pro e600 Semi-Gloss 670. 1.3 - 2.0 mils dry film thickness each coat.
 3. PPG Paints:
 - a. Primer: One coat 6-15 Speedhide Acrylic Masonry Block Filler, 5 - 14 mils dry film thickness.
 - b. Finish: Finish: Two coats PP649 Acri-Shield Semi-Gloss Acrylic, 1.5 mils dry film thickness each coat.
 4. Sherwin-Williams:

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- a. Filler: One coat Loxon Block Surfacers, A24W200 as recommended by S-W.
- b. Finish: Two coats A-100 Gloss Latex House & Trim A8, 1.5 mils dry film thickness each coat.

3.7 SCHEDULE - INTERIOR SURFACES - LATEX

A. Shop Primed Ferrous Metal - Semi-Gloss Latex:

- 1. Benjamin Moore:
 - a. Finish: Two coats Super Spec Latex Semi-Gloss Enamel 276, 1.2 mils dry film thickness each coat.
- 2. Behr:
 - a. Finish: Two coats Behr Pro i300 Interior Semi-Gloss, 370, 1.7 mils dry film thickness each coat.
- 3. PPG Paints:
 - a. Finish: Two coats PPG Speedhide Interior Semi-Gloss Acrylic Latex, 6-500 Series, 1.4 mils dry film thickness.
- 4. Sherwin-Williams:
 - a. Finish: Two coats Promar 200 Zero VOC Interior Latex Semi-Gloss, B31-2600, 1.7 mils dry film thickness each coat.

B. Ferrous Metal - Semi-Gloss Latex:

- 1. Benjamin Moore:
 - a. Primer: One coat M 04 Acrylic Metal Primer; 2.0 mils dry film thickness.
 - b. Finish: Two coats Super Spec Latex Semi-Gloss Enamel 276; 1.2 mils dry film thickness each coat.
- 2. Behr:
 - a. Primer: One coat Premium Plus Multi-Surface Primer 436. 1.7 - 2.7 mils dry film thickness.
 - b. Finish: Two coats BehrPro i300 Interior Semi-Gloss, 370, 1.7 mils dry film thickness each coat.
- 3. PPG Paints:
 - a. Primer: One coat 90-712 Pitt-Tech Int/Ext Industrial DTM Primer/Finish, 2 - 3 mils dry film thickness.
 - b. Finish: Two coats PPG Speedhide Interior Semi-Gloss Acrylic Latex 6-500 Series 1.4 mils dry film thickness.

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4. Sherwin-Williams:

- a. Primer: One coat DTM Acrylic B66 Primer/Finish B66W1, 2.5 - 5.0 mils dry film thickness.
- b. Finish: Two coats Promar 200 Zero VOC Interior Latex Semi-Gloss, B31-2600, 1.5 mils dry film thickness each coat.

C. Gypsum Board Under Vinyl Wall Covering - Latex Primer:

1. Benjamin Moore:

- a. Primer: One coat Super Spec Latex Enamel Undercoater and Primer Sealer 253; 1.2 mils dry film thickness.

2. Behr:

- a. Primer: One coat Premium Interior All-In-One Primer & Sealer 75. 1.6 mils dry film thickness.

3. Dunn Edwards:

- a. Primer: One coat Ultr Grip W715 Acrylic Multi-Purpose Primer, 1.5 mils dry film thickness.

4. Frazee Paint:

- a. Primer: One coat 065 Acryprime, 1.5 mils dry film thickness.

5. PPG Paints:

- a. Primer: One coat PPG Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer 17-921, 1.6 mils dry film thickness.

6. Sherwin-Williams:

- a. Primer: One coat Premium Wall & Wood Primer, B28W08111, 1.6 mils dry film thickness.

D. Insulated Coverings - Flat Latex:

1. Benjamin Moore:

- a. Primer: One coat Super Spec Latex Enamel Undercoater and Primer Sealer 253; 1.2 mils dry film thickness.
- b. Finish: Two coats Super Spec Latex Flat 275; 1.2 mils dry film thickness each coat.

2. Behr:

- a. Primer: One coat Premium Interior Drywall Primer & Sealer 73. 1.0 mils dry film thickness.

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- b. Finish: Two coats BehrPro i300 Interior Flat, 310, 1.7 mils dry film thickness each coat.
- 3. Dunn Edwards:
 - a. Primer: One coat Viny-Lastic W101 pigmented sealer, 1.5 mils dry film thickness.
 - b. Finish: Two coats Decovel W401 Acrylic Flat, 1.5 dry film thickness.
- 4. Frazee Paint:
 - a. Primer: One coat 061 Aqua Seal, 1.3 mils dry film thickness.
 - b. Finish: Two coats 011 Velvin, 1.6 mils dry film thickness each coat.
- 5. PPG Paints:
 - a. Primer: PPG Speedhide Interior Latex Primer Sealer 6-2, 1.0 mils dry film thickness.
 - b. Finish: Two coats PPG Speedhide Interior Flat 6-70 Series, 1.3 mils dry film thickness each coat.
- 6. Sherwin-Williams:
 - a. Primer: One coat Premium Wall & Wood Primer, B28W08111, 1.6 mils dry film thickness.
 - b. Finish: Two coats ProMar 200 Zero VOC Interior Latex Flat Wall Paint B30-2600, 1.6 mils dry film thickness each coat.
- E. Exposed Metal Deck & Joists - Flat Acrylic:
 - 1. Benjamin Moore:
 - a. Finish: One coat M 33 Sweep-Up Spray, Latex Flat; 2.0 mils dry film thickness.
 - 2. Behr:
 - a. Finish: One coat Behr Pro Dryfall Latex Flat 890. 1.8 mils dry film thickness.
 - 3. Dunn Edwards:
 - a. Finish: Two coats Aqua-Fall W6079 Acrylic Dryfall Flat, 2.0 mils dry film thickness.
 - 4. Frazee Paint:
 - a. Finish: One coat Acrylic Dry Fall 504, 3.1 mils dry film thickness.
 - 5. PPG Paints:
 - a. Finish: One coat PPG Speedhide Interior Dry-Fog Spray Paint Flat Vinyl Acrylic Latex 6-715XI, 2.2 mils dry film thickness.

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6. Sherwin-Williams:

- a. Finish: One-two coat Pro Industrial Low VOC Waterborne Acrylic Dry Fall B42W1, 3-4.5 mils dry film thickness.

F. Concrete: Walls and Ceilings, Poured Concrete, Precast Concrete, Unglazed Brick, Cement Board, Tilt-Up, Cast-In-Place including Plaster Walls and Ceilings.

1. Sherwin-Williams:

a. Waterblocking Latex Systems:

1) Flat Finish:

- a) 1st Coat: S-W Loxon Waterblocking Primer/Finish, LX12W50
- b) 2nd Coat: S-W Loxon Waterblocking Primer/Finish, LX12W50 (6 mils. wet, 3.0 mils. dry per coat).

3.8 SCHEDULE - INTERIOR SURFACES - LATEX, LOW VOC

A. Gypsum Board: Flat Finish: Gypsum board ceilings.

1. Benjamin Moore:

- a. Primer: One coat Pristine Eco Spec Latex Primer Sealer 231.
- b. Finish: Two Coats Pristine Eco Spec Latex Flat 219.

2. Behr:

- a. Primer: Premium Plus Interior Drywall Primer & Sealer 73
- b. Finish: Two coats Behr Pro i300 Interior Flat 310.

3. PPG Paints:

- a. Primer: One coat Pure Performance Primer 9-900
- b. Finish: Two coats Pure Performance Flat 9-100

4. Sherwin Williams:

- a. Primer: One coat Premium Wall & Wood Primer, B28W08111 Series.
- b. Finish: Two coats ProMar 200 Zero VOC Interior Latex Flat B30W0265.

B. Gypsum Board: Semi-Gloss Finish: Gypsum board walls and wayfinding soffits – Eggshell.

1. Benjamin Moore:

- a. Primer: One coat Pristine Eco Spec Latex Primer Sealer 231.
- b. Finish: Two Coats Pristine Eco Spec Latex Semi-Gloss 224.

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2. Behr:
 - a. Primer: Premium Plus Interior All-In-One Primer & Sealer 75.
 - b. Finish: Two coats Behr Pro i300 Interior Semi-Gloss 370.
 3. PPG Paints:
 - a. Primer: One coat Pure Performance Primer 9-900
 - b. Finish: Two coats Pure Performance Semi-Gloss 9-500
 4. Sherwin Williams:
 - a. Primer: One coat Premium Wall & Wood Primer, B28W08111 Series.
 - b. Finish: Two coats ProMar 200 Zero VOC Interior Latex Semi-Gloss B31W0265.
- C. Wood: Semi-Gloss Finish:
1. Benjamin Moore:
 - a. Primer: One coat Pristine Eco Spec Latex Primer Sealer 231.
 - b. Finish: Two Coats Pristine Eco Spec Latex Semi-Gloss 224.
 2. Behr:
 - a. Primer: Premium Plus Interior All-In-One Primer & Sealer 75.
 - b. Finish: Two coats Behr Pro i300 Interior Semi-Gloss 370.
 3. PPG Paints:
 - a. Primer: One coat Pure Performance Primer 9-900
 - b. Finish: Two coats Pure Performance Semi-Gloss 9-500
 4. Sherwin Williams:
 - a. Primer: One coat Premium Wall & Wood Primer, B28W8111.
 - b. Finish: Two coats ProMar 200 Zero VOC Interior Latex Semi-Gloss B31-2600.
- D. Ferrous Metal: Semi-Gloss Finish:
1. Benjamin Moore:
 - a. Primer: One coat IronClad Latex Low Lustre Metal and Wood Enamel 363.
 - b. Finish: Two Coats Pristine Eco Spec Latex Semi-Gloss 224.
 2. PPG Paints:
 - a. Primer: One coat Pitt-Tech DTM Acrylic Primer 90-712
 - b. Finish: Two coats Pure Performance Semi-Gloss 9-500
 3. Sherwin Williams: For doors and door frames.

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- a. Primer: One coat ProIndustrial Pro-Cryl Universal WB Primer, B66-310.
 - b. Finish: Two coats ProIndustrial High Performance Acrylic Semi-Gloss B66-650 series.
4. Sherwin Williams: For other ferrous metals.
- a. Primer: One coat Pro Industrial Pro Cryl Universal WB Primer, B666-310.
 - b. Finish: Two coats ProMar 200 Zero VOC Interior Latex Semi-Gloss B31-2600 series.
5. Behr: For other ferrous metals.
- a. Primer: One coat Premium Plus Multi-Surface Primer & Sealer 436.
 - b. Finish: Two coats; Behr Pro i300 Interior Semi-Gloss 370.
- E. Concrete Masonry Units – Semi-Gloss Finish
- 1. Benjamin Moore:
 - a. Filler Coat: MoorCraft Int/Ext Block Filler 285.
 - b. Finish: Two Coats Pristine Latex Semi-Gloss 214.
 - 2. Behr:
 - a. Filler Coat: Behr Pro Block Filler Primer 50.
 - b. Finish: Two coats Behr Pro i300 Interior Semi-Gloss 370.
 - 3. PPG Paints:
 - a. Filler Coat: Speedhide Block Filler 6-15
 - b. Finish: Two coats Pure Performance Semi-Gloss 9-500
 - 4. Sherwin Williams:
 - a. Filler Coat: Loxon Block Surfacer, A24W200.
 - b. Finish: Two coats ProMar 200 Zero VOC Interior Latex Semi-Gloss B31-2600.

END OF SECTION

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099113 – EXTERIOR PAINTING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide all labor, superintendence, materials, tools, equipment, transportation and all means of construction necessary to complete the work, as indicated on the Contract Drawings, described in the Project Specification and as necessary to complete the Contract.
- B. The scope of work shall include, but is not necessarily limited to the following:
 - 1. Surface preparation of soffit panel surfaces to receive new paint products.
 - 2. Field application of new paint products to soffit panel surfaces.
 - 3. Paint accessories.
- C. Surfaces not to be painted:
 - 1. All adjacent masonry, roof and window surfaces.
 - 2. Any surfaces specifically scheduled or noted on Drawings as not to be painted.

1.02 RELATED WORK

- A. Section 07 9200: *Joint Sealants*

1.03 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 - 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 - 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.04 LEAD PAINT

- A. Lead containing paint **IS** expected to be encountered during the work. The Contractor shall implement all necessary procedures and comply with all applicable regulations to protect workers, other building occupants during the work.
- B. Contractor must submit evidence of compliance with the OSHA Lead Standard Construction Industry (29 CFR 1926.62) and Respiratory Protection Standard (29 CFR 1910.134) to the Owner. This shall include a copy of the Contractor's Lead Compliance Program, consisting of the following minimum requirements:

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1. A copy of the Contractor's Respiratory Protection Program, including records of training and fit testing.
 2. A copy of the Contractor's Lead Exposure Assessment protocol.
 3. A description of each activity in which lead is emitted including the equipment used, materials involved, control procedures, crew size, job responsibilities, operating procedures and maintenance protocols.
 4. A description of specific means employed to achieve compliance, including engineering, administrative, and work practice controls.
 5. A copy of the Contractor's Personal Protective Equipment selection criteria.
 6. Records of lead hazard training as required by the Lead Standard.
- C. The surface preparation method selected shall produce the least amount of lead dust and/or fumes. **THE USE OF ABRASIVE BLASTING OR GAS FIRED TORCHES IS PROHIBITED.**
- D. The Owner shall review and approve the surface preparation method and contaminant control measures selected for use by the Contractor.
- E. The Contractor shall post proper warning signs which delineate the work area, indicating: **CAUTION LEAD HAZARD – DO NOT ENTER WORK AREA UNLESS AUTHORIZED.**
- F. The Contractor must ensure that all electrical connections are checked for proper grounding. For wet areas, ground fault protection is required.
- G. Access to the work area shall be limited to the Contractor, the Contractor's employees, and persons designated by the University. No one shall be allowed to enter the work area without appropriate personal protection for the work being done.
- H. The Contractor shall conduct daily clean-up by vacuuming all paint chips and dust using an industrial vacuum cleaner equipped with High Efficiency Particulate Air (HEPA) filtration. Use of household vacuum cleaners or shop vacs without HEPA filtration is prohibited.
- I. The Contractor shall place all waste in suitable (DOT approved) containers, which are to be sealed, secured, and labeled at the end of each work day. Waste generated from lead abatement projects, or other projects that disturb lead containing materials, shall be segregated into the following three waste streams:
1. Solid waste generated from surface preparation activities (e.g. paint chips, dust).
 2. Other solid waste (e.g. plastic sheeting, protective clothing).
 3. Liquid waste (e.g. wastewater, TSP solution).

1.05 QUALITY ASSURANCE

- A. The Applicator shall be a specialty company fully equipped to perform exterior painting and finishing work and be familiar with good construction practices.
1. Field Supervision: The Contractor shall maintain an experienced full-time supervisor on the project site during any times when staining and transparent finishing work is being performed. **DO NOT** change Field Supervisors during the project except for causes beyond the control of the Applicator.
- B. The Applicator shall be fully knowledgeable of all contract document requirements and shall make themselves aware of all job site conditions that will affect their work.

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- C. The Applicator must have a minimum of **Five (5) years** successful experience in comparable projects and employing personnel skilled in the rehabilitation process and operations indicates. The Engineer and Owner shall be provided with a list of comparable projects similar in magnitude and utilizing similar products dating back **Five (5) years**. The list shall include references from property Owners, Property Managers, Contractors and Engineers on previous projects
 - 1. The Contractor shall employ skilled journeymen who are familiar and experienced with the materials and methods specified and are familiar with the design requirements used in exterior painting work.
- D. Obtain all paint materials and components from the same manufacturer. DO NOT change sources or manufacturers of materials during the work.
- E. All painting work shall be completed in accordance with the Contract drawings and specifications and in strict accordance with the manufacturer's written instructions and recommendations.
- F. Use only thinners manufactured and recommended by the paint system manufacturer for each paint product used.
- G. Comply with applicable codes, regulations, ordinances and laws regarding use and application of paint systems that contain volatile organic compounds (VOC).
- H. The manufacturer shall review and advise applicator on proper application procedures and techniques.

1.06 SUBMITTALS

- A. Provide submittals in accordance with the provisions of Section 01 3300 "Submittal Procedures".
- B. Product Data: Provide standard printed product literature, technical data, specifications, color charts and installation instructions for each type of product indicated.
- C. Material Safety Data Sheets (MSDS): Submit manufacturer's MSDS sheets for all components of the work.
- D. Certification by manufacturer that product supplied complies with requirements that limits the amount of VOC's in paint products.
- E. Colors and Samples:
 - 1. Submit manufacturer's color charts showing the full range of colors available for each type of material indicated. The color will be selected by the Owner.
 - 2. Submit sample for verification of each color and finish required. Prepare two 8 inch square in size and upon materials corresponding with those to be finished on the building. Samples shall represent actual expected color and finish. Furnish and resubmit sufficient samples until acceptance has been obtained.
 - 3. All samples shall be marked for identification. The Owner will retain samples during construction.
 - 4. Accepted samples shall constitute standards for color and finish for acceptance or rejection of completed work. All work shall match the accepted colors and samples. Acceptance of

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samples does not constitute approval of deviations from the Contract Documents, unless such deviations are specifically accepted by the Owner and Engineer in writing.

- F. Testing: The Contractor shall perform a field bond test of the installed paint products on each substrate condition. If any tests reveals non-compliance, Contractor shall correct deficiencies in a manner satisfactory to the Owner at no additional cost.
- G. No claim by the Contractor concerning the unsuitability of any material specified or his inability to produce first class work with same will be entertained unless such claim is made in writing to the Owners' Representative before the work is started.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Deliver materials to the site in the manufacturers' original sealed containers with labels intact and seals unbroken. Labels shall include the product identification, manufacturer's batch number, date of manufacture, mixing, thinning and application instructions and color designation.
- B. Storage of Materials: Store all materials in strict accordance with Manufacturer's requirements and as stated in this specification
 - 1. Store materials in a protected, dry and well ventilated area, out of direct sunlight and in original packaging. Store all materials at temperatures of 50°F and above to facilitate handling.
 - 2. Store and protect all materials to prevent deterioration, damage or intrusion of foreign matter. **DO NOT** use and dispose of materials which are deteriorated, damaged or contaminated with foreign matter.
 - 3. Store all materials in accordance with MSDS and in compliance with local fire authority and safety requirements. After partial use of materials replace lids promptly and tightly to prevent contamination.
 - 4. All flammable materials must be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on container or supplied by material manufacturer or supplier.
 - 5. Maintain storage area in a neat and clean manner throughout the work.
- C. Handling of Materials: Handle and protect materials prior to and during installation in strict accordance with manufacturer's requirements and recommendations. **DO NOT** use materials which have been damaged, deteriorated or contaminated by foreign matter. Damaged, deteriorated or contaminated materials shall be replaced at the Contractor's expense.
- D. Oily rags and waste shall be removed and disposed of each day, and all other necessary precautions shall be taken to avoid danger of fires.
- E. Employ all necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing and applying coatings.

1.08 PROJECT CONDITIONS

- A. Apply paint materials in strict accordance with manufacturer's written instructions and recommendations. Air and surface substrate temperatures shall not exceed the minimum or maximum requirements for product application.

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1. Substrate and ambient air temperatures shall be between 50 degrees F and 90 degrees F and free from moisture during application.
 2. Relative humidity must be less than 85 percent and surface temperature must be at least 50 degrees F above the dew point temperature at the time of application, and for a minimum of four (4) hours after application.
 3. **DO NOT** apply paint materials to damp or wet surfaces. Allow surfaces to thoroughly dry and attain proper environmental conditions before starting or continuing coating application.
 4. Wind velocity must be less than 20 mph.
- B. No installation work shall be performed during rainy or inclement weather and on frost or wet covered surfaces. **DO NOT** commence with the application until environmental conditions are suitable for the installation of materials.
- C. Use all means necessary to protect the materials of this section before, during and after installation and to protect the work and material of other trades, the building and the public.
- D. Protection of Adjacent Materials:
1. The Contractor shall be responsible for protecting all existing adjacent materials and during the execution of the work. Provide all necessary protection and work procedures to avoid damage to all existing exterior material assemblies and landscape features including sidewalks and paving.
 2. The Contractor shall repair all damage to adjacent materials caused by the execution of the work of this Section at no expense to the Owner. Damaged materials shall be repaired or replaced by mechanics experienced in the respective work to the satisfaction of the Owner.

1.09 SCAFFOLDING AND PROTECTION

- A. Furnish, maintain and remove all scaffolding, ladders and planks required for the work.
- B. Furnish drop cloths for the protection of roofs, walks, prefinished materials and building fixtures.
- C. Painted and finished surfaces subject to damage or defacement due to other work on the building shall be properly protected and covered.
- D. Contractor is responsible for any and all damage to painted work and to that of other work caused by operations under this Section.
- E. All surfaces not to be painted shall be kept entirely free of paint by adequate temporary coverage.

PART 2 - PRODUCTS

2.01 MATERIAL MANUFACTURERS

- A. Basis-of-Design Product: The design of exterior paint systems is based on Sherwin Williams Co. paint products. Comparable manufacturer products may be incorporated into the work.
- B. Comparable Manufacturers: Subject to compliance with requirements, product manufacturer's which may be incorporated in the work include, but are not limited to the following:
 1. Benjamin Moore & Co (Benjamin Moore)

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2. Kelly Moore Paint Co. (Kelly-Moore)
3. PPG Industries, Inc. (Pittsburg Paints)
4. Acceptable Equivalent

2.02 PAINT MATERIALS, GENERAL

- A. Provide primers, intermediate coat and finish coat materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Provide manufacturer's highest grade of paint products specified. Materials not displaying manufacturer's product identification are not acceptable.
- C. Provide paint materials, including primers, intermediate coat and finish coat materials that conform to current VOC classification limits.

2.03 PAINT MATERIALS

- A. Basis-of-Design Product: The design of exterior paint systems is based on Sherwin Williams Co. paint products. The exterior paint system shall consist of the following:
 1. Primer: Sherwin-Williams Extreme Bond Primer.
 2. Top Coat: Sherwin-Williams Emerald Exterior Acrylic Latex.
- B. Color shall be selected by the Owner from the manufacturer's full range of colors. Provide colors selected by Owner for each surface to be painted.

2.04 MIXING AND TINTING

- A. Deliver paints ready-mixed and pre-tinted to job site. Mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment and color and gloss uniformity.
- B. Mix only in mixing pails placed in suitably sized non-ferrous or oxide resistant metal pans.
- C. Thin paint materials only in strict accordance with manufacturer's recommendations. **DO NOT** exceed recommendations.

PART 3 - EXECUTION

3.01 PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting at the jobsite at least one (1) week prior to the start exterior painting work. Require attendance of parties directly affecting work of this section, including but not limited to, General Contractor, Installer and Manufacturer's Representative. Review substrate preparation, installation procedures, coordination and scheduling required with related work.
- B. Contractor shall prepare a typed copy of meeting minutes and forward to all attendees and the Owner and Engineer.

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3.02 EXAMINATION

- A. The Contractor and Applicator shall thoroughly verify that all site and substrate conditions are satisfactory for the application of paint materials. Examine and verify substrate surfaces are sound, dry, clean and prepared for application.
- B. Report any unsatisfactory conditions to the Contractor, Engineer and Owner which may affect satisfactory work or prevent achieving proper adhesion so that suitable corrections can be made by the Applicator.
- C. Implement all necessary corrections to unsatisfactory conditions which may affect satisfactory work or prevent proper adhesion of paint materials prior to the start of application.
- D. DO NOT proceed with application until all unsatisfactory conditions have been corrected. Absence of such notification shall constitute Contractor's implicit acceptance of site and substrate conditions.
- E. Conditions that cannot be repaired by normal surface preparation, and that will adversely affect execution, permanence or quality of work shall be immediately brought to the attention of the Engineer and Owner.

3.03 GENERAL PROCEDURES

- A. Perform any work that disturbs lead-containing paint, handle all material that involves lead-containing paint, transport and dispose of all lead-containing paint and residue in compliance with all applicable federal, state and local laws and regulations for identification, removal, labeling, handling, containerization, transportation, and disposal of lead-containing material
- B. The Contractor shall use plastic or canvas drop cloths to catch all lead-contaminated waste when preparing exterior surfaces. The drop cloths shall be secured to the building, cover all shrubs and trees, and extend at least eight feet from the building. Dust and chips shall be promptly removed from the drop cloths and surrounding affected areas.
- C. The Contractor shall assure that all windows or doors are closed and that outdoor air intakes are protected. This also applies to adjacent buildings that are in close proximity to the work area.
- D. When using surface preparation methods that generate dust, the Contractor shall construct containment areas to prevent the dispersion of lead-contaminated dust into adjacent areas and/or the environment.
- E. When using pressure wash or steam systems for paint preparation, the Contractor shall collect all liquid waste. A system of collection such as gutters, troughs, leaders and barrels shall be designed by the Contractor and submitted to the University for review and approval prior to the start of the work.
- F. The Contractor shall adhere to all appropriate OSHA regulations including but not limited to scaffolds, fall protection, barricades, fire protection, personal protective equipment, and electrical.

3.04 PREPARATION

- A. General: Remove any items already in place that are not to be painted. If removal is not practical, provide surface-applied protection before surface preparation and coating.

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- B. Cleaning: Before applying paint, clean substrate of any substances that could impair the bond of paint products. Schedule cleaning and paint application so dust and other contaminants from cleaning will not fall on wet, newly painted surfaces.
 - 1. The gentlest cleaning methods shall be utilized to minimize lead-containing dust. Attempt to use water at a pressure less than 60 psi and a natural bristle brush before using harsher methods.
 - 2. Biological stains shall be removed with a mixture of hot water and bleach (3:1 ratio). Apply cleaning solution by low pressure sprayer or by hand with a natural brush. Scrub the affected area and allow the solution to remain on the surface for 10 minutes. Thoroughly rinse the area with clean water. Surfaces must be allowed to dry at least 48 hours before any material application.
- C. Surface Preparation: The Contractor shall use preparation techniques that minimize lead-containing dust. Clean and prepare surfaces to be painted according to the manufacturer's written instructions for each substrate condition and as follows.
 - 1. General: Wet scrape with hand tools surfaces exhibiting areas of loose or peeling paint, and areas of adhesion failure. Feather all rough edges by hand sanding techniques to provide a smooth transition between paint layers and substrate. The substrate shall be free of all marks from sanding and tools.

3.05 MATERIAL PREPARATION

- A. Material Preparation: Carefully mix and prepare paint materials according to manufacturer's written instructions.
- B. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating materials before using.
- D. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat to match the color of the finish coat but provide sufficient difference in shade of undercoat to distinguish each separate coat.

3.06 APPLICATION, GENERAL

- A. DO NOT apply paint products until surface is dry and free of detrimental conditions within the limitations recommended by paint manufacturer. Paint products must be recoated within the maximum time allowed or the surface must be prepared for adhesion.
- B. Comply with recommendations of product manufacturer for drying time between succeeding coats.
- C. Apply each material coat in conformance with the manufacturer's recommended spreading rate. Provide total dry film thickness (DFT) of the entire system not less than recommended by the manufacturer and as specified. Apply multiple material coats(s) as required to obtain recommended dry film thickness.

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- D. Apply paint with suitable brushes and roller equipment as recommended by the manufacturer.
 - 1. Brush Application: Use brushes best suited for material applied and of appropriate size for the surface or item being coated.
 - a. Apply primers and first coat by brush unless manufacturer's written instructions permit using roller.
 - b. Brush out and work brush coats into surfaces in an even film.
 - c. Eliminate cloudiness, spotting, laps, brush marks, runs, sags, ropiness or other surface imperfections.
 - 2. Rollers: Use rollers of carpet, velvet back or high-pile sheep's wool as recommended by manufacturer for material and texture required.
- E. Keep brushes, rollers and spraying equipment clean and free from contaminates and suitable for the finish required.
- F. Leave all parts of framing clean and true to details with no undue amount of paint in corners and depressions.
- G. Make edge of paint adjoining other materials clean and sharp with no overlapping.

3.07 APPLICATION

- A. Apply a prime coat, as recommended by manufacturer, to surfaces indicated to be painted on the contract drawings. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in the first coat appear to ensure a finish coat with no defects.
- B. Apply first coat to surfaces that have been cleaned and prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- C. Upon completion of first coat, inspect all surfaces for next paint application. If sanding is required to produce a smooth, even surface, sand between applications in accordance with manufacturer's written instructions. Care must be taken not to expose substrate or re-application of first coat will be required.
- D. Finish (top) coats shall be smooth, free of brush marks, streaks, laps or pile up of paints, and skipped or missed areas. Upon completion of finish coat, inspect all surfaces for non-compliant conditions and correct.
- E. If undercoats or other conditions show through final coat, apply additional coats until cured film has uniform coating finish, color and appearance. Give special attention to edges, corners, crevices, exposed fasteners and similar surfaces to ensure that they receive same DFT thickness to that of flat surfaces.
- F. As work progresses, remove misplaced materials. Upon completion and before guarantee period begins, all surfaces shall be free of smears, dirt and debris caused by this work and defects in work due to faulty materials, method or workmanship shall be corrected.
- G. Touch up paint materials shall be applied in a manner to minimize touch-up appearance. Touch up shall not be obvious.

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3.08 PAINT SCHEDULE

- A. Soffit Panel Surfaces: Three coat system consisting of one primer coat and two finish coats.

3.09 CLEANING

- A. Perform painting so as to keep work areas and premises clean and free from accumulation of scrape materials, debris and other surplus materials. Remove all oily rags, waste, etc., at end of each working day.
- B. Remove spilled, splashed, or splattered paint from all surfaces. Remove excess paint by washing and scraping without scratching or damaging adjacent finished surfaces.
- C. Dispose of lead-containing waste material in strict accordance with local, state and federal regulations.
- D. Leave storage space clean and in condition required for equivalent spaces in project.
- E. Clean all building windows in work area. Remove all accumulated dirt, dust and excess materials. Windows must be streak free and thoroughly clean.

3.10 PROTECTION

- A. Provide final protection to all finished painted surfaces that ensures the installation is without damage or deterioration at the time of Substantial Completion.

END OF SECTION

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099723 – FAÇADE COATING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide all labor, superintendence, materials, tools, equipment, transportation and all means of construction necessary to furnish and install all façade coating work as shown on the Contract Drawings, described in the Project Specification and as necessary to complete the Contract.
- B. The scope of work includes, but is not necessarily limited to, the following:
 - 1. Surface preparation of existing concrete, masonry, and stucco surfaces.
 - 2. Field apply new coatings to localized areas of concrete, masonry, and stucco surfaces.
 - 3. Coating accessories.
- C. Surfaces not to be coated:
 - 1. All adjacent masonry, roofing, and window surfaces
 - 2. Any surfaces specifically scheduled or noted on Drawings as not to be painted.

1.02 RELATED WORK

- A. Section 03 0130: *Concrete Rehabilitation*
- B. Section 04 0100: *Masonry Rehabilitation*
- C. Section 07 9200: *Joint Sealants*
- D. Section 09 2423: *Stucco Repairs*

1.03 REFERENCES STANDARDS

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D3359: Standard Test Method for Measuring Adhesion by Tape Test
 - 2. ASTM D4138: Standard Test Method for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive Means
 - 3. ASTM D4259: Standard Practice for Abrading Concrete
 - 4. ASTM D4263: Standard Test Method for Indicating Moisture in Concrete by Plastic Sheet Method
 - 5. ASTM D4414: Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notch Gages

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- 6. ASTM D4541: Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- B. International Concrete Repair Institute (ICRI):
 - 1. Guideline 310.2: Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays
- C. The Society for Protective Coatings (SSPC):
 - 1. SSPC-SP13: Surface Preparation of Concrete
 - 2. SSPC Paint Application Specification No. 7: Applying Thin Film Coatings to Concrete

1.04 QUALITY ASSURANCE

- A. All work with special coating products shall be done in strict accordance with the manufacturer's instructions and recommendations.
- B. Manufacturer Qualifications:
 - 1. The Manufacturer shall be a company specializing in applicable coating systems for a minimum of **Ten (10) years**.
 - 2. The Manufacturer must submit a list of Five (5) projects dating back Five (5) years where their products have been used on similar sized projects with similar jobsite and exposure conditions.
- C. Applicator Qualifications:
 - 1. The Applicator shall be familiar with and fully equipped to apply coating materials and shall be familiar with good construction practices.
 - 2. The Applicator shall be an experienced company specializing in applicable coating system(s) and has been authorized and trained by the Manufacturer. The applicator must submit written confirmation of "Approved Applicator" status.
 - 3. The Applicator must have a minimum **Five (5) years** experience in the application of the same or similar coating systems. The Architect and Owner shall be provided with a list of projects similar in magnitude dating back **Five (5) years**.
- D. Testing Data: All test data submitted by the Contractor must be data generated by an independent testing laboratory. Product tests must be totally controlled by said testing laboratory; specimens cannot be pretreated by the manufacturer.

1.05 SUBMITTALS

- A. Provide submittals in accordance with the provisions of Section 01 3300 "Submittal Procedures".
- B. Product Data: Submit manufacturer's product literature, technical data, specifications and detailed application instructions for all products.

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- C. Color Chart: Submit manufacturer's color chart for initial color selection.
- D. Material Safety Data Sheets (MSDS): Submit manufacturer's MSDS sheets for all components of the work.
- E. Sample for Initial Selection: Upon selection of an initial color range the Contractor shall apply up to four (4) coating system samples, at least 12 inches square, to the existing concrete and masonry for color(s), texture and general acceptance.
 - 1. The Contractor shall remove samples from existing surfaces upon selection of "FINAL" selected color.
- F. Mockup Sample: Upon completion of initial selection samples, the Contractor shall apply two (2), four (4) square foot samples of the coating systems on the existing concrete and masonry demonstrating the full coating system, color selection, texture and general appearance.
 - 1. Sample coating accepted by the Owner and Architect shall serve as a minimum quality standard for all other similar work on the same building. The remainder of the coatings will be reviewed and rejected and/or repaired based on the mockup sample. Contractor must retain sample during construction in an undisturbed condition.
 - 2. Acceptance of the sample coating does not constitute acceptance of deviations from the Contract Documents, unless such deviations are specifically accepted by the Owner and Architect in writing.
- G. Contractor shall submit documentation indicating proposed coating is compatible with proposed repair materials and sealants prior to application.
- H. Substrate Acceptance:
 - 1. Submit a certified statement issued by the manufacturer of the coating materials, and signed by the Applicator, stating that all areas to receive coating have been inspected and found satisfactory to receive this Work and are not in conflict with the "Guarantee" requirements. Start of application indicated Contractor's acceptance of surfaces.
 - 2. Perform "Standard Test Method for Indicating Moisture in Concrete by Plastic Sheet Method" prior to each days primer applications.
- I. Submit two (2) maintenance manuals which indicate location of membrane in structure, type of coating, thickness of coating, and recommendation for routine care and maintenance.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Deliver materials to the site in manufacturers' original sealed, undamaged containers with labels intact and seals unbroken. Labels shall include the material name, date of manufacture, expiration date, lot number and color designation.
- B. Storage of Materials: Store materials in strict accordance with manufacturer's requirements and as stated in this specification.
 - 1. Store materials in a protected dry and well-ventilated area, out of direct sunlight and in original packaging. Store all materials at temperatures of 50°F and above to facilitate

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handling.

2. Store and protect all materials to prevent deterioration, damage or intrusion of foreign matter. **DO NOT** use and dispose of materials which are deteriorated, damaged or contaminated with foreign matter.
 3. Store all materials in accordance with MSDS and in compliance with local fire authority and safety requirements. After partial use of materials replace lids promptly and tightly to prevent contamination.
 4. All flammable materials must be stored in a cool, dry area away from open flames or excessive heat. Follow precautions outlined on container or supplied by material manufacturer or supplier.
 5. Maintain storage area in a neat and clean manner throughout the work.
- C. Handling of Materials: Handle and protect materials prior to and during installation in strict accordance with manufacturer's requirements and recommendations. **DO NOT** use materials which have been damaged, deteriorated or contaminated by foreign matter. Damaged, deteriorated or contaminated materials shall be replaced at the Contractor's expense.

1.07 PROJECT CONDITIONS

- A. Apply coating materials in strict accordance with manufacturer's written instructions, and recommendations. Air and surface substrate temperatures shall not exceed the minimum or maximum requirements for product application.
1. Substrate and ambient air temperatures shall be between 50°F and 90°F unless otherwise permitted by the manufacturer.
 2. Relative humidity must be less than 85 percent and surface temperature must be at least 5°F above the dew point temperature at the time of application, and for a minimum of four (4) hours after application.
 3. **DO NOT** apply paint materials to damp or wet surfaces. Allow surfaces to thoroughly dry and attain proper environmental conditions before starting or continuing coating application.
 4. Wind velocity must be less than 20 mph.
- B. No installation work shall be performed during rainy or inclement weather and on frost or wet covered surfaces. **DO NOT** commence with the application until environmental conditions are suitable for the application of the materials.
- C. **DO NOT** commence application if rain is expected within 12 hours. Allow 12 hours after rain has occurred and assure that surface is dry and acceptable before application.
- D. Use all means necessary to protect the materials of this section before, during and after installation and to protect the work and material of other trades, the building and the public.
- E. During coating application it is essential that maximum effort is made to protect the mechanic and others near the working area from exposure to vapors from coating products.

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F. Protection of Adjacent Materials:

1. The Contractor shall be responsible for protecting all existing adjacent materials and during the execution of the work. Provide all necessary protection and work procedures to avoid damage to all existing exterior material assemblies and landscape feature including sidewalks and paving.
2. The Contractor shall repair all damage to adjacent materials caused by the execution of the work of this Section at no expense to the Owner. Damaged materials shall be repaired or replaced by mechanics experienced in the respective work to the satisfaction of the Owner.

1.08 SPECIAL CONDITIONS

- A. The Engineer recognizes that the properties of certain proprietary coating systems might adversely affect other building materials and/or adjacent building surfaces such as asphalt, paint and other items. The Contractor is totally and solely responsible for identifying these potential problem areas with the proposed coating product and advise the Engineer prior to acceptance by the Owner.
- B. Coating manufacturer must submit in writing, seven (7) days prior to initial application, that said coating system is compatible with repair materials to be used.
- C. As required, and as recommended by the manufacturer, the Contractor will protect all plants, vegetation, cars and other items from coating/penetrating sealer overspray.

1.09 FIELD TESTING

- A. Perform field testing of existing coating system according to ASTM D3359 “Measuring Adhesion by Tape Test Method A”.
- B. Perform 2-inch x 2 inch test cuts in partially-completed or fully-completed coating to confirm applied system thickness.
- C. Perform bond tests of the facade coating to the existing substrate and remnant coating materials. Acceptable tensile bond strength shall be in the range of 200 to 250 pounds per square inch (psi) with failure present at the coating to concrete interface. No failure shall be present within the coating system.
- D. If any test reveals non-compliance of installed membrane, Contractor shall correct deficiencies in a manner satisfactory to the Architect at no cost to the Owner.
- E. The cost for testing and patching test cut areas is included in the base bid cost.

1.10 WARRANTY

- A. The coating manufacturer and the Contractor must forward a written guarantee for the product and installation covering all labor and materials for a period of **Five (5) years**. The Manufacturer and Contractor must individually and collectively warrant that the system will function satisfactorily for a period of **Five (5) years** from the Date of Substantial Completion of the coating application. The following conditions shall be specifically covered under the warranty:
 1. Cohesive or adhesive failure of the system.

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2. Weathering deficiencies resulting in failure of the system.
- B. As part of the warranty process the coating manufacturer must have a qualified representative on site at least once a week during coating application. Said representative shall forward a typed copy of the field observations to the Architect for each visit.

PART 2 - PRODUCTS

2.01 MATERIAL MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, product manufacturer's which may be incorporated in the work include, but are not limited to the following:
 1. Conproco Corporation, Hooksett, New Hampshire
 2. IPA Systems, Philadelphia, Pennsylvania
 3. Mapei Corporation, Deerfield Beach, Florida
 4. Sika Corporation, Lyndhurst, New Jersey
 5. Acceptable Equivalent

2.02 FACADE COATING

- A. Façade coating shall be a single component, water based, high solids, elastomeric acrylic coating system.
- B. The Contractor shall supply all materials necessary for the application of coating materials to all exposed concrete surfaces. The Contractor is responsible for the selection of the façade coating system.
- C. Obtain all coating materials from a single manufacturer.
- D. Color shall be manufacturer's standard color as selected by the Owner. Provide color selected by Owner for each surface to be coated.

PART 3 - EXECUTION

3.01 PRE-INSTALLATION MEETING

- A. Convene a pre-construction meeting at the jobsite at least one (1) week prior to the start of coating work. Require attendance of parties directly affecting the work of this section, including but not limited to the Contractor, Applicator and Manufacturer's Representative, at the very minimum. Review substrate preparation, installation procedures, coordination and scheduling required with related work.
- B. Contractor shall prepare a typed copy of meeting minutes and forward to all attendees and the Owner and Engineer.

3.02 EXAMINATION

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- A. The Contractor and Applicator shall thoroughly verify that all substrate and site conditions are satisfactory for the installation of coating materials. Examine and verify substrate surfaces are sound, dry, clean and prepared for application.
- B. Report any unsatisfactory conditions to the Contractor, Engineer and Owner which may affect satisfactory work or prevent achieving proper adhesion so that suitable corrections can be made by the Applicator.
- C. Implement all necessary corrections to unsatisfactory conditions which may affect satisfactory work or prevent proper adhesion of paint materials prior to the start of application.
- D. **DO NOT** proceed with application until unsatisfactory conditions have been corrected. Absence of such notification shall constitute Contractor's implicit acceptance of existing site and substrate conditions.
- E. Conditions that cannot be repaired by normal surface preparation, and that will adversely affect execution, permanence or quality of work shall be immediately brought to the attention of the Engineer and Owner.
- F. Prior to commencing application, an Authorized Manufacturer's Representative shall inspect jobsite conditions and immediately report his findings to the Contractor, Owner and Engineer. Report all surface preparation deficiencies with required corrections.

3.03 SUBSTRATE PREPARATION

- A. Inspect and clean substrate surfaces to remove laitance, loose material, grease, oil, dust, dirt and other foreign contaminants which could impair bond of the coating materials.
- B. Cracks and Joints:
 - 1. Repair all cracks greater than 1/16 inch wide as identified on the drawings and in the field. In lieu of cutting and caulking, these cracks may be prepared per manufacturer's recommendations.
 - 2. Cracks under 1/16 inch wide shall be cleaned and repaired as required by the coating manufacturer.
- C. Repair Materials:
 - 1. All concrete repair materials and sealants that come in contact with the new coating shall conform to the requirements of the coating manufacturer.
 - 2. All concrete repair materials and sealants shall be cured in conformance with the coating manufacturer's requirements prior to coating installation.
- D. Preparation:
 - 1. Clean and prepare concrete surfaces using waterblast techniques in strict accordance with the manufacturer's requirements and recommendations. Preparation work shall start and bottom and proceed in an upward direction, using a minimum 4,000 psi pressure. Final rinsing and cleaning shall be done with a fan tip.

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- a. It is the project intent to remove the existing coating from the concrete substrate by using waterblast techniques. It is anticipated that the concrete surface following coating removals will have a surface profile between ICRI CSP 3 and CSP 5.
 - b. The Contractor shall continuously observe the coating removal process and monitor for acceptable surface profile. The Contractor shall make adjustments as necessary to minimize excessively rough surface profiles following surface preparation.
 - c. All new concrete or concrete repair surfaces shall be prepared in strict accordance with manufacturer's requirements to achieve a minimum CSP 3 profile.
2. Clean and remove all existing corrosion or staining byproducts from concrete and masonry surfaces. Apply diluted cleaning agent with soft bristle brush, remove cleaning agent with low pressure waterblast. Contractor shall limit overspray from waterblasting. Repeat as necessary to remove all stains. Remove all cleaning products prior to coating application.
3. Remove all efflorescence byproducts from surfaces prior to coating application.
4. Test substrate for excessive moisture content, in manner recommended by manufacturer or ASTM D4236.
- E. Protect adjacent areas from coatings with drop cloths and/or masking. Mask off adjoining surfaces not to receive traffic coating and close off roof and floor drains to prevent spillage and migration of liquid materials outside membrane area.
- F. In addition to the waterblast cleaning of the façade it is the intent that any mold or algae growth be removed by brushing and cleaning with a mild soap detergent. Repeat as necessary to remove all organic growth.

3.04 OTHER SURFACE PREPARATION

- A. Sealant:
 1. Remove and replace sealant at all horizontal/vertical intersections; all such coating intersections shall be prepared and installed per coating manufacturer's requirements and details.
 2. Provide backer material and sealant at all horizontal/vertical intersections; all such coating intersections shall be prepared and installed per project documents and coating manufacturer's requirements and details.
 3. Seal around all penetrations located in the coating, per project documents and coating manufacturer's requirements and details.

3.05 COATING APPLICATION

- A. General Coverage: The new coating systems shall extend to the areas noted on the Contract Documents.
- B. Contractor shall coordinate with Owner to control and manage aromatic properties of coating material. These efforts by the Contractor shall include the potential use of fans, temporarily covering air intakes and other control methods acceptable to the Owner. Contractor shall submit

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ventilation procedures to Owner for review.

- C. The Manufacturer's Representative must review substrate preparation prior to new coating application. The Manufacturer's Representative must state in writing that substrate conditions are acceptable to receive the coating materials.
- D. Concrete substrate must be free of all dust, dirt, form oils, form release agent residues, chemical contamination and biological growth. Substrate must be thoroughly dry prior to coating application.
- E. Apply all coating materials in strict conformance to the manufacturer's written instructions. Apply first coat to prepared substrate surfaces as soon as practicable after preparation and before subsequent surface deterioration.
- F. All coatings shall be applied with suitable brushes or roller equipment. Work all coating materials onto substrate in an even film. Maintain a wet edge in application and complete application to a finished edge.
- G. Keep brushes, rollers and other equipment clean and free from contaminants and suitable for the required finish.
- H. Coating shall be applied in accordance with manufacturer's recommended coverage rates to obtain required dry film thickness.
- I. Allow sufficient drying time between coats, per manufacturer's instructions. Allow a minimum of 12 hours in good weather between coats. In colder weather, allow 24 hours minimum dry time between coats.
- J. Finish shall be smooth, free of brush marks, streaks, laps or pile up of coatings and skipped or missed areas.
- K. Touch up and restore damaged or deteriorated coated surfaces. Touch up materials shall be applied in a manner to **NOT** be obvious and minimize touch-up appearance.

3.06 COATING SCHEDULE

- A. Apply two (2) coats to all surfaces scheduled to receive façade coating systems. Each coat shall maintain a 8.0 to 10.0 mils dry film thickness (DFT).

3.07 FIELD QUALITY CONTROL

- A. Final Inspection: Final inspection of completed work shall be carried out by the Owner, Engineer, Contractor and Manufacturer's representative.
- B. Coating system shall be installed to the proper system thickness in such a manner as to be free of dirt, visible imperfections and foreign objects. All such non-conformances shall be repaired or otherwise corrected by the Contractor at no additional cost to Owner.

3.08 CLEANING

- A. Promptly as the work proceeds and on completion, clean and remove spilled, splashed, or splattered paint from all surfaces. Remove excess coating by washing and scraping without scratching or damaging adjacent finished surfaces.

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- B. Following all repairs and coating application perform a final cleaning of the building to remove any accumulated dirt, dust, repair materials or coating products prior to the time of Substantial Completion.
- C. Clean all building windows. Remove all accumulated dirt, dust and repair materials. Windows must be streak free and thoroughly clean.

3.09 PROTECTION

- A. Provide final protection to all finished coated surfaces that ensures the installation is without damage or deterioration at the time of Substantial Completion. The Contractor shall repair any damage or deterioration in accordance with the Manufacturer's requirements.

END OF SECTION

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SECTION 12 61 00 - FIXED AUDIENCE SEATING

PART 1 GENERAL

1.1 SUMMARY

- A. Work Included in this section: Provision of floor-mounted fixed swivel seats on swing arms including attachment, or other work required for installation unless otherwise noted.

1.2 SUBMITTALS

- A. Product Data including manufacturer's assembly instructions.
- B. Code Requirements - Compliance with the required local and national building and safety codes is the sole responsibility of the Owner/Architect/Contractor. Shop drawings are based on code requirements for assembly seating as found in IBC (International Building Code). Code information above is offered for informational purposes only and strictly as a courtesy to the Owner/Architect/Contractor. This is in no way an assumption of duty on the part of KI relative to code interpretation and compliance. KI personnel are not trained for, nor are they experts at code compliance or interpretation.
- C. Field Verification - Shop drawings incorporate building information compiled from various sources associated with this project and deemed as reliable. Conditions directly affecting the product or its installation must be field verified.
- D. Drawing Review - Shop drawings are produced to assure compliance with the contract. Drawings must be reviewed by the Owner/Architect/Contractor, or other appropriate owner's representative. If drawings are correct, mark them as such; if incorrect, note corrections to be made and return to KI for corrections. Any deviations from the contract included in the shop drawing must be approved in writing from the Owner/Architect/Contractor. Drawing must be signed by authorized personnel including title, company or affiliation, and date. When power is specified, all locations of electrical and data infeeds must be verified and approved by a signature on the drawings by the responsible party. Manufacture of product shown is not scheduled until drawing review is complete and an authorized signature is received.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Store delivered in clean, safe, dry area.

1.4 SCHEDULING

- A. Schedule installation of items to occur after application of exposed finishes wherever installation will not damage exposed finish surfaces and completion of finishes will not impede installation.

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PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: KI
- B. Product: University Seating
- C. Alternates or substitutes. “As Equal” products must be approved as meeting specification.

2.2 CONSTRUCTION

2.1 BASIS OF DESIGN

- A. Manufacturer: KI
- B. Product: University Seating
- C. “As Equal” products must be approved as meeting specification.

2.2 CONSTRUCTION

- A. Floor-mounted steel frames which support solid core continuous worksurfaces with self-returning swivel seats and including but not limited to:
 - 1) Worksurfaces are 1-1/4” thick, warp-resistant construction with a center core of 1-1/8” thick particleboard, a minimum of 40-50 lb/ft³ PCF density to prevent warping.
 - 2) K & V Tite Joint fasteners, hardwood spline, and steel splice plates are used to provide a virtual “seamless top”.
 - 3) Powder-coat painted steel frames provide maximum durability.
- B. Frames (choose basic or select)

“Basic” rectangular bases are constructed of 14-gauge seam-welded tubular steel, 2” x 4” from floor plate to junction box, 2” x 2” from junction box to table mounting plate, welded into an integral unit to accommodate slope floors from 0-8 degrees. Table mounting plate at the top of the base is 11-gauge, 6” x 8” die-formed steel plate with two oval holes, 3/4” x 1-1/2”, to allow for power and cable access and eight pierced holes to secure top to base with screws (furnished). Floor mounting flange is 11-gauge, 6” x 8” die-formed steel plate with 1/2” holes pierced in each corner for anchoring into floor. Base is secured to floor with four bolts for each base. Flange covers

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constructed of molded plastic are supplied for each base and conceal anchor bolts. Designated power or data bases, as shown on the space plan, are specified with a 2" x 4" cutout on both sides of the base at the bottom to allow for power or communication/data cable access. Routing of the wires can be up through the floor beneath the center of the base or through the cutout. Cutout comes with a metal cover painted to match the base. Swing-away seat is mounted at end of horizontal beam 1-1/2" x 2", 11-gauge, hinged at cantilevered frame junction box. Construction is of die-formed, heavy-gauge collar with polyacetal copolymer thermoplastic bearings at 8-gauge die-formed steel junction box. Spring-activated return is completely enclosed; all moving parts are protected by covers to prevent injury. Swing beam collar with bushings is anchored in junction box with 1/2" shoulder bolt and lock nut. Fixed-height seats swivel on 3/4" diameter post welded to seat spider and inserted into 1-3/4" tubular column welded to 1-1/2" x 2", 11-gauge horizontal beam. Nylon upper cams and PBT lower cams control rotation and memory return with spring tension. Slots in column allow adjustment of the seat in the field to parallel the edge of the worksurface. Swivel mechanism, upper and lower cams, spring and interior of seam column are lubricated for rotation. Optional basic style bases with 4A extension spacing are bases that are set back 4" from the back edge of the worksurface allowing for more user space. The Basic style base remains the same, only the tree (weldment arm between the base and worksurface) is extended and angled at 24 degrees to allow the additional 4" spacing.

C. Worksurfaces

Worksurfaces are nominal 1-1/4" thick, warp-resistant construction and have a center core of 1-1/8" thick particleboard, minimum of 40-50 lb/ft³ PCF density. The top surface is a minimum of .040" thick high-pressure laminate meeting NEMA standards and the bottom surface, a balanced .040" thick phenolic backer. Laminate and backing sheet are permanently bonded to particleboard core using cross-linking poly vinyl acetate (PVA) adhesive under continuous pressure in a hot press. Continuous worksurface joints are secured with a minimum of two mechanical fasteners equal to Knappe & Voight #516, hardwood spline and heavy-gauge steel plate under joint. Worksurfaces have cutouts to accept PowerUp modules when PowerUp is specified.

Molded Edge Finishes: 74P: 1-1/4" PVC Free

D. Modesty Panels and End Panels – optional (choose type)

- 1) Laminate modesty panels are nominal .810" thick warp-resistant construction. Center core is 3/4" thick particleboard, minimum of 40-50 lb/ft³ PCF density. The front surface is a minimum of .040" thick high-pressure laminate meeting NEMA standards and the back surface has a .040" phenolic backing sheet. The spacing of all laminate modesty panels is 1/2" between the panels on non-continuous panels, and no spacing on continuous modesty panels.

Laminate Edge Finishes: 74P: 1-1/4" PVC Free

E. Shells

- 1) Strive®

Seat is constructed of injection-molded polypropylene. An optional upholstered seat is also available, for which molded urethane foam is attached to an injection-molded polypropylene seat

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board then upholstered using a drawstring process. The assembled seat pad is attached to the seat by means of hidden fasteners. An optional upholstered back is available, constructed of 1/2" thick urethane foam attached to an injection-molded polypropylene back board, then upholstered using a draw-string process. The assembled back pad is attached to the back by means of fasteners which are exposed and color matched to the polypropylene. The backrest is injection-molded polypropylene with integral steel cantilever springs. The combination of the slotted polypropylene back and spring steel provides a supportive flexing back. Springs are nominal 4.5 mm diameter chrome silicon valve spring wire.

2.3 FINISHES

Powder-coat paint is standard finish on all frames. Standard KI fabrics available; COM (customer's own material) fabrics require factory approval. All finishes and colors to be selected by architect. "Finish Specification Guide" can be viewed on KI.com under the "documents & symbols" link located on the "University Fixed Seating" product page. Custom colors and finishes available; contact KI.

2.4 COMPLIANCE

"University Seating" is designed and manufactured in compliance with the intent of ANSI/BIFMA X5.4 - Large Occupant Public & Lounge Seating. Seating exceeds all applicable BIFMA performance test criteria. Electrical components of University seating (excluding curved modesty panels) are UL Classified for electrical hazards. University Seating is SCS Indoor Advantage™ Gold certified and conforms to the ANSI/BIFMA Furniture Emissions Standard and the CDPH/EHLB Standard Method (CA1350) for the open plan and school classroom parameters.

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordination details with other work supporting, adjoining, or otherwise contracting items as required to insure proper installation.
- B. Examine construction to verify that:
 - 1) Dimensions are correct to manufacturer's specifications.
- C. Do not install items until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install items in strict accordance to manufacturer's Assembly Instructions and approved Shop Drawings.
- B. FLOOR MOUNTING REQUIREMENTS

Minimum Floor Construction Required for Upright Installation

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- 1) Concrete Floors
 - 3000 psi concrete compressive strength
 - 3" thick free of obstructions for 1-1/2"
 - 4" thick free of obstructions for 2-1/2" for riser mount
 - Riser to be plumb within 1/8 degree
 - Minimum anchor embedment 1-1/2" for floor mount or 2-1/2" for riser mount

Note: Warranty null and void if KI product is installed on flooring not meeting minimum structural requirements stated above. For non-typical floors not stated above, contact KI.

Floor Fastener Requirements

- 1) Concrete Floors
 - 1/4" x 2-5/8" Hilti KH-EZ
 - Max. torque: 18 ft. lbs.
 - Two anchor assemblies required per base
- 2) Concrete Risers
 - 1/4" x 3" Hilti KH-EZ
 - Max. torque: 18 ft. lbs.
 - Two anchor assemblies required per plate

Note: Floor mounting anchors are provided as specified with every order

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SECTION 321216

ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Pennsylvania DOT Publication 408

1.2 SUMMARY

- A. Section Includes:
 - 1. Hot-mix asphalt paving.
 - 2. Asphalt surface treatments.

1.3 DEFINITION

- A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
 - 1. Job-Mix Designs: For each job mix proposed for the Work.
- B. Material Certificates: For each paving material, from manufacturer.
- C. Material Test Reports: For each paving material.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.
- B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of PADOT.
- C. Pre-installation Conference: Conduct conference at Project site.

1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
 - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
 - b. Review condition of subgrade and preparatory work.
 - c. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
 - d. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 1. Tack Coat: Minimum surface temperature of 60 deg F.
 2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
 3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.
- C. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
- D. Sub-base: Crushed 2A Stone in accordance with PA DOT Publication 408.

2.2 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO M 320, of required performance grade.
- B. Asphalt Cement: ASTM D 3381 for viscosity-graded material.
- C. Tack Coat: ASTM D 977 emulsified asphalt, of suitable grade and consistency for application.

- D. Water: Potable.

2.3 AUXILIARY MATERIALS

- A. Joint Sealant: ASTM D 6690, Type I, hot-applied, single-component, polymer-modified bituminous sealant.

2.4 MIXES

- A. Hot-Mix Asphalt: Provide pavement depths as indicated on the plans. Asphalt mix to be in accordance with PA DOT 408.
 - 1. Contractor to submit asphalt mix and certification of mix produced at a PA DOT Approved Plant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll subgrade in one direction, Limit vehicle speed to 3 mph.
 - 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Owner, and replace with compacted backfill or fill as directed.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.
- D. Verify that utilities and other items requiring a cut and installation beneath the asphalt surface have been completed and that asphalt surface has been repaired flush with adjacent asphalt prior to beginning installation of imprinted asphalt.

3.2 PATCHING

- A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
- B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.

2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

- C. Patching: Fill excavated pavements with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.
- D. Patching: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.3 REPAIRS

- A. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch in existing pavements.
- B. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of 1/4 inch.
 1. Clean cracks and joints in existing hot-mix asphalt pavement.
 2. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.

3.4 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.5 HOT-MIX ASPHALT PLACING

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
 2. Spread mix at minimum temperature of 250 deg F.
 3. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
 4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

- B. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.6 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
 - 1. Clean contact surfaces and apply tack coat to joints.
 - 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 - 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 - 4. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 - 5. Compact asphalt at joints to a density within 2 percent of specified course density.

3.7 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- C. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- D. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.8 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
 - 1. Base Course: Plus or minus 1/2 inch.

2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch.
2. Surface Course: 1/8 inch.

3.9 FIELD QUALITY CONTROL

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

B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979.

1. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
 - a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than 3 cores taken.
 - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

E. Replace and compact hot-mix asphalt where core tests were taken.

F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
 - 1. Sidewalks.
 - 2. Driveways
 - 3. Site Flat Concrete.
- B. Related Sections include the following:
 - 1. Division 32 Section "Concrete Paving Joint Sealants" for joint sealants of joints in concrete pavement and at isolation joints of concrete pavement with adjacent construction.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
- D. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Admixtures.

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4. Bonding agent or epoxy adhesive.

E. Field quality-control test reports.

F. Minutes of pre-installation conference.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.

C. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

D. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1. Before submitting design mixtures, review concrete pavement mixture design and examine procedures for ensuring quality of concrete materials and concrete pavement construction practices.

1.6 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

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1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
 1. Use flexible or curved forms for curves with a radius 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- B. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.
- C. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60; Cut bars true to length with ends square and free of burrs.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:
 1. Portland Cement: ASTM C 150, Type I. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, coarse aggregate, uniformly graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar pavement applications and service conditions using similar aggregates and cementitious materials.
 1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

- C. Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:
 - 1. Aggregate Sizes: 3/4 to 1 inch nominal.
- D. Water: ASTM C 94/C 94M.
- E. Air-Entraining Admixture: ASTM C 260.
- F. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.6 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: [ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.
- C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements, and as follows:

2.7 PAVEMENT MARKINGS

- A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with AASHTO M 248, Type: as required.

1. Color: As indicated.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
 1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
 1. Compressive Strength (28 Days): 4500 psi.
 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.60.
 3. Slump Limit: 4 inches, plus or minus 1 inch.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
 1. Air Content: 6 percent plus or minus 1.5 percent for 1-inch nominal maximum aggregate size.
- D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
- E. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:
 1. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
- F. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
 1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction. Limit vehicle speed to 3 mph.
2. Subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch require correction.

- C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
 2. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows to match jointing of existing adjacent concrete pavement:
1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
 2. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.
- D. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site.
- F. Do not add water to fresh concrete after testing.
- G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use

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only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

- I. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.
 - 1. Remove and replace concrete that has been placed for more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.
- J. Screed pavement surfaces with a straightedge and strike off.
- K. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- L. Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finish, and jointing as required for formed pavement.
 - 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.
- M. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.
- N. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.
- O. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
 - 1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:

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1. Elevation: 1/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot-long, unleveled straightedge not to exceed 1/4 inch.
4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 1. Testing Frequency: Obtain at least 1 composite sample for each **100 cu. yd.** or fraction thereof of each concrete mix placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.

A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

- C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.12 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

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END OF SECTION

SECTION 321373

CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Cold-applied joint sealants.
 - 2. Joint-sealant backer materials.
- B. Related Sections include the following:
 - 1. Section 321313 "Concrete Paving" for exterior cement concrete paving and curbs.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of joint sealant and accessory.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.

1.6 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:

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1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 JOINT SEALANTS

- A. Multicomponent, Nonsag, Urethane, Elastomeric Polyurethane Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Use T.
 1. Color: Standard grey or tan color to match concrete. Submit full range of standard colors for selection by Owner and Engineer.

2.3 JOINT-SEALANT BACKER MATERIALS

- A. Joint-Sealant Backer Materials: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.
- B. Backer Strips for Cold-Applied Joint Sealants: ASTM D 5249; Type 2; of thickness and width required to control joint-sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

2.4 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

- A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions.
- C. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of joint-sealant backings.
 - 2. Do not stretch, twist, puncture, or tear joint-sealant backings.
 - 3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:
 - 1. Place joint sealants so they fully contact joint substrates.
 - 2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
 1. Remove excess joint sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING AND PROTECTION

- A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.
- B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

END OF SECTION 321373

SECTION 321723

PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes painted markings applied to asphalt pavement.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site
 - 1. Review methods and procedures related to marking pavement including, but not limited to, the following:
 - a. Pavement aging period before application of pavement markings.
 - b. Review requirements for protecting pavement markings, including restriction of traffic during installation period.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include technical data and tested physical and performance properties.
- B. Shop Drawings: For pavement markings.
 - 1. Indicate pavement markings, colors, lane separations, defined parking spaces, and dimensions to adjacent work.
 - 2. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.
- C. Samples: For each exposed product and for each color and texture specified; on rigid backing, 8 inches square.

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1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of PADOT for pavement-marking work.
 - 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in ADA Standards for Accessible Design and ICC A117.1

2.2 PAVEMENT-MARKING PAINT

- A. Pavement-Marking Paint, Parking Lots: Alkyd-resin type, lead and chromate free, ready mixed, complying with AASHTO M 248.
 - 1. Color: As indicated
- B. Glass Beads, for cross walks : AASHTO M 247, Type 1 made of 100 percent recycled glass.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that pavement is dry and in suitable condition to begin pavement marking according to manufacturer's written instructions.
- B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

3.2 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

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- B. Allow paving to age for a minimum of 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils
 - 1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to pavement. Mask an extended area beyond edges of each stencil to prevent paint application beyond stencil. Apply paint so that it cannot run beneath stencil.
 - 2. Broadcast glass beads uniformly into wet markings at a rate of 6 lb/gal.

3.3 PROTECTING AND CLEANING

- A. Protect pavement markings from damage and wear during remainder of construction period.
- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 321723