



UPPER POTTS GROVE TOWNSHIP NEW MUNICIPAL COMPLEX

UPPER POTTS GROVE TOWNSHIP

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VOLUME 1 OF 2

P R O J E C T M A N U A L

UPPER POTTSGROVE TOWNSHIP NEW MUNICIPAL COMPLEX POTTSTOWN, PA 19464

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SECTION 00.0115 - LIST OF DRAWINGS

The List of Drawings indicated on the Drawing Cover Sheet form a part of this Contract, as set forth in the accompanying Conditions of the Contract for Construction

END OF SECTION 00.0115

**REQUEST FOR BIDS
UPPER POTTS GROVE TOWNSHIP
NEW MUNICIPAL COMPLEX**

The Upper Pottsgrove Township will receive sealed bids for the construction of a New Municipal Complex to be located at 2290 Gilbertsville Road, Pottstown, PA 19464. Work includes Site Construction, General Construction, Plumbing Construction, Mechanical Construction, and Electrical Construction. ***Drawings will be made available on PennBid by end of day March 31, 2025***

Sealed bids will be received online via the PennBid Program until 2:00PM. prevailing time, **Thursday May 22, 2025**, at which time they will be opened. After bid opening the results will be available for viewing on the PennBid website. Successful bidder will be selected by Owner at a later date. No bid may be withdrawn after the due date and time or within sixty (60) days after the date of the bid opening. Upper Pottsgrove Township reserves the right at its option to waive any informalities, irregularities, defects, errors, or omissions in any or all of Bids and to reject all Bids if it is in the best interest of the Upper Pottsgrove Township.

Questions will be accepted until 5:00 P.M., prevailing time, **Monday May 12, 2025**; questions will be accepted through PennBid, only from prime bidders. All questions must be submitted through PennBid and will not be accepted in any other manner. A **NON-MANDATORY PRE-BID CONFERENCE** will be held at the township building at 11:00am on Tuesday April 22, 2025 Should additional site visits be requested, the township will provide a date/time for contractors to walk the property; this will be determined at the pre-bid conference.

Bidding Documents and solicitation details are available online without charge, at www.pennbid.bonfirehub.com. Results of the bidding may be viewed by Bidders on the PennBid website.

The apparent low bidder and the next two lowest bidders must submit, to the Construction Manager, originals of the Bidding Documents within two (2) business days from the date of the bid opening, Including an SOV for their work and all other required documents from the Construction Manager.

All bids must be accompanied by a bid security in the amount of ten percent (10%) of the base bid and all other documents in the checklist. Performance Bond and a Labor Material and Payment Bond will be required from the lowest responsible bidders at a later date along with all other required documentation. This project is subject to the provisions of the Commonwealth of Pennsylvania Prevailing Wage Act.

Ms. Michelle Reddick, Township Manager
Upper Pottsgrove Township

Run date:
3/28/25

SECTION 001153 - CONTRACTOR QUALIFICATION STATEMENT

The Contractor Qualification Statement is the American Institute of Architect's Document A305 "Contractor Qualification Statement", 2020 Edition, and is bound herewith.

Document A305-2020 is enclosed for each Prime Contractor's review.

END OF SECTION 001153

DRAFT AIA® Document A305™ – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:

(Organization name and address.)

« »

SUBMITTED TO:

(Organization name and address.)

« »

TYPE OF WORK TYPICALLY PERFORMED

(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

« »

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:

(Check all that apply.)

- ☐ Exhibit A – General Information
- ☐ Exhibit B – Financial and Performance Information
- ☐ Exhibit C – Project-Specific Information
- ☐ Exhibit D – Past Project Experience
- ☐ Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION

The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

Organization's Authorized Representative
Signature

« »

Date

« »

Printed Name and Title

NOTARY

State of: « »

County of: « »

Signed and sworn to before me this « » day of « » « »

Notary Signature

My commission expires: « »

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

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Exhibit A

General Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by « » and dated the « » day of « » in the year « »
(In words, indicate day, month and year.)

§ A.1 ORGANIZATION

§ A.1.1 Name and Location

§ A.1.1.1 Identify the full legal name of your organization.

« »

§ A.1.1.2 List all other names under which your organization currently does business and, for each name, identify jurisdictions in which it is registered to do business under that trade name.

« »

§ A.1.1.3 List all prior names under which your organization has operated and, for each name, indicate the date range and jurisdiction in which it was used.

« »

§ A.1.1.4 Identify the address of your organization's principal place of business and list all office locations out of which your organization conducts business. If your organization has multiple offices, you may attach an exhibit or refer to a website.

« »

§ A.1.2 Legal Status

§ A.1.2.1 Identify the legal status under which your organization does business, such as sole proprietorship, partnership, corporation, limited liability corporation, joint venture, or other.

« »

- 1 If your organization is a corporation, identify the state in which it is incorporated, the date of incorporation, and its four highest-ranking corporate officers and their titles, as applicable.

« »

- 2 If your organization is a partnership, identify its partners and its date of organization.

« »

- 3 If your organization is individually owned, identify its owner and date of organization.

« »

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- .4 If the form of your organization is other than those listed above, describe it and identify its individual leaders:

<< >>

§ A.1.2.2 Does your organization own, in whole or in part, any other construction-related businesses? If so, identify and describe those businesses and specify percentage of ownership.

<< >>

§ A.1.3 Other Information

§ A.1.3.1 How many years has your organization been in business?

<< >>

§ A.1.3.2 How many full-time employees work for your organization?

<< >>

§ A.1.3.3 List your North American Industry Classification System (NAICS) codes and titles. Specify which is your primary NAICS code.

<< >>

§ A.1.3.4 Indicate whether your organization is certified as a governmentally recognized special business class, such as a minority business enterprise, woman business enterprise, service disabled veteran owned small business, woman owned small business, small business in a HUBZone, or a small disadvantaged business in the 8(a) Business Development Program. For each, identify the certifying authority and indicate jurisdictions to which such certification applies.

<< >>

§ A.2 EXPERIENCE

§ A.2.1 Complete Exhibit D to describe up to four projects, either completed or in progress, that are representative of your organization's experience and capabilities.

§ A.2.2 State your organization's total dollar value of work currently under contract.

<< >>

§ A.2.3 Of the amount stated in Section A.2.2, state the dollar value of work that remains to be completed:

<< >>

§ A.2.4 State your organization's average annual dollar value of construction work performed during the last five years.

<< >>

§ A.3 CAPABILITIES

§ A.3.1 List the categories of work that your organization typically self-performs.

<< >>

§ A.3.2 Identify qualities, accreditations, services, skills, or personnel that you believe differentiate your organization from others.

<< >>

§ A.3.3 Does your organization provide design collaboration or pre-construction services? If so, describe those services.

<< >>

§ A.3.4 Does your organization use building information modeling (BIM)? If so, describe how your organization uses BIM and identify BIM software that your organization regularly uses.

<< >>

§ A.3.5 Does your organization use a project management information system? If so, identify that system.

<< >>

§ A.4 REFERENCES

§ A.4.1 Identify three client references:

(Insert name, organization, and contact information)

<< >>

§ A.4.2 Identify three architect references:

(Insert name, organization, and contact information)

<< >>

§ A.4.3 Identify one bank reference:

(Insert name, organization, and contact information)

<< >>

§ A.4.4 Identify three subcontractor or other trade references:

(Insert name, organization, and contact information)

<< >>

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Exhibit B

Financial and Performance Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by « » and dated the « » day of « » in the year « »
(In words, indicate day, month and year.)

§ B.1 FINANCIAL

§ B.1.1 Federal tax identification number:

« »

§ B.1.2 Attach financial statements for the last three years prepared in accordance with Generally Accepted Accounting Principles, including your organization's latest balance sheet and income statement. Also, indicate the name and contact information of the firm that prepared each financial statement.

« »

§ B.1.3 Has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, been the subject of any bankruptcy proceeding within the last ten years?

« »

§ B.1.4 Identify your organization's preferred credit rating agency and identification information.

(Identify rating agency, such as Dun and Bradstreet or Equifax, and insert your organization's identification number or other method of searching your organization's credit rating with such agency.)

« »

§ B.2 DISPUTES AND DISCIPLINARY ACTIONS

§ B.2.1 Are there any pending or outstanding judgments, arbitration proceedings, bond claims, or lawsuits against your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A, Section 1.2, in which the amount in dispute is more than \$75,000?

(If the answer is yes, provide an explanation.)

« »

§ B.2.2 In the last five years has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management:

(If the answer to any of the questions below is yes, provide an explanation.)

- .1 failed to complete work awarded to it?

« »

- .2 been terminated for any reason except for an owners' convenience?

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« »

- .3 had any judgments, settlements, or awards pertaining to a construction project in which your organization was responsible for more than \$75,000?

« »

- .4 filed any lawsuits or requested arbitration regarding a construction project?

« »

§ B.2.3 In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management; or any of the individuals listed in Exhibit A Section 1.2:
(If the answer to any of the questions below is yes, provide an explanation.)

- .1 been convicted of, or indicted for, a business-related crime?

« »

- .2 had any business or professional license subjected to disciplinary action?

« »

- .3 been penalized or fined by a state or federal environmental agency?

« »

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Exhibit C

Project Specific Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by « » and dated the « » day of « » in the year « »
(In words, indicate day, month and year.)

PROJECT:

(Name and location or address.)

« »
« »

CONTRACTOR'S PROJECT OFFICE:

(Identify the office out of which the contractor proposes to perform the work for the Project.)

« »

TYPE OF WORK SOUGHT

(Indicate the type of work you are seeking for this Project, such as general contracting, construction manager as constructor, design-build, HVAC subcontracting, electrical subcontracting, plumbing subcontracting, etc.)

« »

CONFLICT OF INTEREST

Describe any conflict of interest your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A Section 1.2, may have regarding this Project.

« »

§ C.1 PERFORMANCE OF THE WORK

§ C.1.1 When was the Contractor's Project Office established?

« »

§ C.1.2 How many full-time field and office staff are respectively employed at the Contractor's Project Office?

« »

§ C.1.3 List the business license and contractor license or registration numbers for the Contractor's Project Office that pertain to the Project.

« »

§ C.1.4 Identify key personnel from your organization who will be meaningfully involved with work on this Project and indicate (1) their position on the Project team, (2) their office location, (3) their expertise and experience, and (4) projects similar to the Project on which they have worked.

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<< >>

§ C.1.5 Identify portions of work that you intend to self-perform on this Project.

<< >>

§ C.1.6 To the extent known, list the subcontractors you intend to use for major portions of work on the Project.

<< >>

§ C.2 EXPERIENCE RELATED TO THE PROJECT

§ C.2.1 Complete Exhibit D to describe up to four projects performed by the Contractor's Project Office, either completed or in progress, that are relevant to this Project, such as projects in a similar geographic area or of similar project type. If you have already completed Exhibit D, but want to provide further examples of projects that are relevant to this Project, you may complete Exhibit E.

§ C.2.2 State the total dollar value of work currently under contract at the Contractor's Project Office:

<< >>

§ C.2.3 Of the amount stated in Section C.2.2, state the dollar value of work that remains to be completed:

<< >>

§ C.2.4 State the average annual dollar value of construction work performed by the Contractor's Project Office during the last five years.

<< >>

§ C.2.5 List the total number of projects the Contractor's Project Office has completed in the last five years and state the dollar value of the largest contract the Contractor's Project Office has completed during that time.

<< >>

§ C.3 SAFETY PROGRAM AND RECORD

§ C.3.1 Does the Contractor's Project Office have a written safety program?

<< >>

§ C.3.2 List all safety-related citations and penalties the Contractor's Project Office has received in the last three years.

<< >>

§ C.3.3 Attach the Contractor's Project Office's OSHA 300a Summary of Work-Related Injuries and Illnesses form for the last three years.

§ C.3.4 Attach a copy of your insurance agent's verification letter for your organization's current workers' compensation experience modification rate and rates for the last three years.

§ C.4 INSURANCE

§ C.4.1 Attach current certificates of insurance for your commercial general liability policy, umbrella insurance policy, and professional liability insurance policy, if any. Identify deductibles or self-insured retentions for your commercial general liability policy.

§ C.4.2 If requested, will your organization be able to provide property insurance for the Project written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis?

<< >>

§ C.4.3 Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, Insurance A.3.2.2.2? If so, identify.

<< >>

§ C.5 SURETY

§ C.5.1 If requested, will your organization be able to provide a performance and payment bond for this Project?

<< >>

§ C.5.2 Surety company name:

<< >>

§ C.5.3 Surety agent name and contact information:

<< >>

§ C.5.4 Total bonding capacity:

<< >>

§ C.5.5 Available bonding capacity as of the date of this qualification statement:

<< >>

DRAFT AIA® Document A305™ – 2020

Exhibit D

Contractor's Past Project Experience

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☒ CM advisor ☐ Other:
SUSTAINABILITY CERTIFICATIONS				

DRAFT AIA® Document A305™ – 2020

Exhibit E

Contractor's Past Project Experience, Continued

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☒ CM advisor ☐ Other:
SUSTAINABILITY CERTIFICATIONS				

AGREEMENT OF SURETY

KNOW ALL MEN BY THESE PRESENTS, that we, _____
as Surety, a corporation existing under the laws of the State of _____, and authorized to transact business in the Commonwealth of Pennsylvania hereby agree intending to be legally bound hereby, to execute and deliver to the **UPPER POTTS GROVE TOWNSHIP**, within the time limit specified in the Contract Documents, the Performance Bond and Labor and Material Payment Bond in the forms included in the Contract Documents each in an amount of 100% of the contract amount, in favor of the **UPPER POTTS GROVE TOWNSHIP**, as required for the faithful performance and proper fulfillment of the contract for the **UPPER POTTS GROVE TOWNSHIP** New Municipal Complex as set forth in the Contract Documents on behalf of _____
_____ (hereinafter called the Bidder) provided that the above contract be awarded to the bidder within sixty (60) days after the date of opening of the bids or otherwise as set forth in the Instructions to Bidders.

DATED: _____
(CORPORATE SURETY)

ATTEST: _____ BY: _____
Secretary President

(CORPORATE SEAL)

SECTION 00.1155 – LETTER OF INSURER

DATE: _____

TO: **Ms. Michelle Reddick**, Township Manager
Upper Pottsgrove Township
1409 Farmington Avenue
Pottstown, PA 19464

Dear **Ms. Reddick**:

The undersigned insurance agent, licensed to do business in the Commonwealth of Pennsylvania and authorized to issue this letter on behalf of the following insurance company or companies:

hereby represents that if

(Insert name of Bidder)

is awarded the contract for the construction of the project, as is described in the Contract for Construction, then the above-named insurance company or companies will issue insurance, naming **Upper Pottsgrove** Township and its Architect as additional insured, for the coverages and in the amounts required by the Contract Documents, as set forth in Article 11 of the General Conditions.

(Name of Agent)

By: _____
(Authorized Representative)

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SECTION 00.2113 – INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS

Terms used in these Instructions to Bidders, which are defined in the Standard General Conditions of the Construction Contract, have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to Owner, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award. The term "Bidding Document" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and the Contract Documents (including all Addenda issued prior to receipt of Bids). The numbering system refers to Articles.

2. COPIES OF BIDDING DOCUMENTS

- 2.1 Complete sets of .pdf documents may be obtained at no cost via PennBid (www.pennbid.bonfirehub.com)
- 2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Architect assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents. Bid Documents consist of Contract Documents (and all reference standards), specifications, addenda and drawings. Bidder is responsible to make sure that the set of Bidding Documents is complete and that any printed contract document is legible and represents properly all the information as represented in the PDF file.
- 2.3 Owner and Architect, in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

3. QUALIFICATIONS OF BIDDERS

- 3.1 To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit upon Construction Manager's request, written evidence such as financial data, insurance certificates, previous experience of the Bidder and its assigned personnel, present commitments and any other information that may be requested by the Construction Manager. Each Bid must contain evidence of Bidder's qualification to do business in the state where the Project is located, or covenant to obtain such qualification prior to award of the Contract. Owner reserves the right to reject Bidder if he cannot satisfy all of the Qualification Requirements, including those listed in the Technical Specifications.
- 3.2 In determining the lowest responsible Bidder, the Owner will consider the Bidder's integrity, efficiency, experience of the Bidder and its assigned personnel, promptness, current work load, financial capability, performance on recent projects, references from Owners, Architects and Engineers, potential list of sub-contractors, schedule of values, and ability to successfully and timely complete the Project. The Owner will scrutinize the apparent low Bidder's information for full disclosure before intent to award is issued. The apparent low Bidder must demonstrate competency and provide any or all of the above information upon immediate request. Owner reserves the right to reject Bid if all the information is not received on time and/or does not satisfy

the Owner's evaluation process. The Owner reserves the right to reject all bids if it is deemed in the best interests of the Owner.

- 3.4 In addition to all the requirements specified in Articles 3.1, 3.2 and 3.3 regarding qualifications of Bidders, the Owner will evaluate bidders using the following additional criteria:

- 3.4.1 The Bidder and its assigned personnel, must have successfully performed a minimum of 3 previous public projects within the last 5 years of similar type or a contract value. Provide references including telephone number and contact person.
- 3.4.2 The Bidder shall perform not less than ten percent (10%) of the actual construction Work with staff employed directly by the company. Project management shall NOT be included in this percentage.
- 3.4.3 The Bidder, or its assigned personnel, must have successfully performed at least 3 public projects within the last 5 years where they have managed multiple trades and coordinated and scheduled all the activities for projects as per 3.4.1. Provide references including telephone number and contact person.
- 3.4.4 An agreement of Surety certifying that the Surety Company is committed to provide the bidder with a Performance Bond and Payment Bond each in the amount of one hundred percent (100%) of the contract amount. The Surety Company must have an AM Best rating of A- or better and a financial rating of Class X or higher. The Surety Company must be registered to conduct business in Pennsylvania, and be in good standing.
- 3.4.5 The Bidder's performance on previous projects including claims, litigation, coordination of work, staffing and timely completion. If it is determined that the bidder does not have a record on previous projects that the Owner in its sole discretion considers to be reasonable, the Owner reserves the right to reject the bid.
- 3.4.6 The Bidder shall also refer to Articles 11 and 16.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 4.1 It is the responsibility of each Bidder, before submitting a Bid, to:
- (1) Examine the Contract Documents thoroughly.
 - (2) Visit the site to become familiar with local conditions that may affect the cost, progress, performance, or furnishing the Work.
 - (3) Consider federal, state, and local laws and regulations that may affect cost, progress, performance, or furnishing of the Work.
 - (4) Study and carefully correlate Bidder's observations with the Contract Documents.
 - (5) Notify Architect of any conflicts, errors, or discrepancies discovered in the Contract Documents.

4.1.1 REVIEW OF DRAWINGS AND SPECIFICATIONS

- A. Bidders shall thoroughly examine and be familiar with the Specifications and Drawings. The failure or omission of any Bidder to receive or examine any form, instrument, document, or visit the site and acquaint himself with conditions there existing, shall in no way relieve any Bidder from obligation with respect to his Bid. By submitting a Bid, the Bidder agrees and warrants that he has examined the site and the Specifications and Drawings and, where Specifications and/or Drawings require in any part of the Work a given result to be produced, that the Specifications and Drawings are adequate and the required result can be produced under the Specifications and Drawings. No claim for any extra will be allowed because of alleged impossibilities in the production of the results specified or because of inadequate or improper plans and specifications and whenever a result is required, the successful Bidder shall furnish any and all extras and make any changes needed to produce the required result for the sum stated in the form of proposal.
- B. Should any Bidder find discrepancies, duplications or omissions in the documents or have doubt as to the meaning expressed by the Contract Documents, he shall make inquiry at once in writing to the Architect. Where changes, corrections or clarifications to Contract Documents are deemed necessary by the Architect, he will issue written addenda ("Addenda") accordingly. Addenda shall be a part of the Contract Documents. No oral, telephone or letter instructions will be considered as having effect upon the Contract Documents; Addenda only shall constitute change to them. Bidders and Sub-bidders are urged to make early examination of Contract Documents and make inquiries about them if necessary, even though prices may not be determined until late in the bidding period.

- 4.2 The site will be available for visits at the pre-bid conference and at the other specific designated dates and times determined at the pre-bid.
- 4.3 Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to Owner and Architect by owners of such Underground Facilities or others, and Owner and Architect do not assume responsibility for the accuracy or completeness thereof. Contractor shall verify the location of all underground utilities prior to any excavation.
- 4.4 General Contractor is responsible, on behalf of the Owner, for providing the physical markings of all existing utilities including those on site as indicated on the drawings or that may be identified in the field. The locations shown on the drawings are approximate. The Bidder must include in his proposal the cost for hand-dug test holes, or other means, to ascertain the precise position of such underground facilities on the site owned by the Owner. This verification should be performed for any utilities to be relocated, removed, modified or that may otherwise interfere with planned work. The utilities in the public right of way will be identified and marked by the appropriate facility owner as per the requirements of the PA One Call Act as amended. Physical layout is to be performed in full compliance with the PA One Call PA Act 287 of 1974 as amended by Act 18 of 1996.

- 4.5 The Owner and Architect will not be responsible for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities and other physical conditions. This information is provided based on information available. Bidder assumes responsibility for verifications, adjustments and modifications that may be required since this is generally recognized as inherent to the work of the Contract Documents.
- 4.6 Before submitting a Bid, each Bidder will, at Bidder's expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 4.7 On request in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests, as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.
- 4.8 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by the Bidder in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Bidder. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.
- 4.9 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the bid documents and, that without exception, the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

5. INTERPRETATIONS AND ADDENDA

- 5.1 All questions about the meaning or intent of the Contract Documents are to be directed as listed below. Interpretations or clarifications considered necessary by the Architect in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Construction Manager/Architect as having received the Bidding Documents. Questions received after May 12, 2025 will not be answered
- 5.2 Only questions answered by formal written Addenda will be binding. Oral or other interpretations or clarifications will be without legal effect.
Addenda may also be issued to modify the Bidding Documents as deemed advisable by Construction Manager, Owner or Architect.
- 5.3 All questions must be submitted in writing

6. BID SECURITY AND BOND REQUIREMENTS

- 6.1 A proposal shall be rejected unless accompanied by a Bid Security in the amount of ten percent (10%) of the total of the Base Bid and all possible add alternates. Bid Security shall be in the form of a certified check or bank cashier's check payable to Owner or a Bid Bond in the form set forth herein, naming as obligee, the Owner.
- 6.2 The Owner may declare the Bid Security forfeited to the Owner if, following such issuance of a Notice of Intent to Award to the apparent lowest responsible Bidder, such Bidder fails to deliver the items required for complete evaluation and for contract execution required by the Bid Documents and within the time required by the Bid Documents.
- 6.3 If Bid Security is submitted in the form of a Bid Bond, the Bid Bond shall be submitted on the form referenced in the Bidding Documents, and the Attorney-in-Fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of its Power of Attorney, authorizing said Attorney-in-Fact to act on behalf of the surety. The Power of Attorney must be dated the same date as the Bid Bond and both the Bid Bond and Power of Attorney shall have affixed the raised corporate seal of the surety. The Bid Bond form, as well as the Performance Bond and Payment Bond forms, must be executed by a surety licensed and authorized to conduct business as a surety within the Commonwealth of Pennsylvania, have an AM Best rating of 'A-' or higher and a financial rating of Class X or higher and shall be named in the current list of companies holding Certificates of Authority as acceptable sureties on federal bonds and/or as acceptable reinsuring companies as published in Circular 570 (as amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department, and the amount of the bond shall not exceed the underwriting risk of such surety set forth in said circular of revisions thereof. Any bond must be acceptable to Owner.
- 6.4 The Bid Security of Bidders will be returned (unless forfeited as stated above) at the Bidder's request, upon (1) the execution of the Agreement Between Owner and Contractor by Owner, or (2) the rejection of all bids by Owner, or (3) the expiration of the firm bid period set forth in Section 12 of these Instructions to Bidder. The Owner shall not be liable for any interest on bid security which is held in accordance with these Bidding Instructions.

7. NON-COLLUSION AFFIDAVIT

More than one proposal for the contract from an individual, partnership, corporation, or an association under the same or different name will be grounds for the rejection of all proposals in which such Bidder is interested. Any or all proposals will be rejected if there is reason for believing that collusion exists among any of the Bidders. Participants in such collusion will not be considered in future proposals. A Non-Collusion Affidavit shall be executed and submitted with the Bidder's proposal using the form set forth herein.

8. CONTRACT TIME

The Bidder acknowledges that a condition of the Contract is that time is of the essence of the Contract and the number of calendar days within which, or the dates by which, the Work is to be substantially

completed and completed and ready for final payment (the Contract Time) are set forth in the Contract Documents and are accepted by the Bidder without exception or conditions.

9. LIQUIDATED DAMAGES

Provisions for liquidated damages are set forth in the Contract Documents.

10. SUBSTITUTE OR "OR-EQUAL" ITEMS

The various materials and products specified in the specifications by name or description are given to establish a minimum acceptable standard of quality and of cost for bid purposes. When proprietary names are used, and there does not follow a "listing" of acceptable approved manufacturers and/or products, then the proprietary named item must be included in the bid proposal without substitution. When proprietary names are used, and there follows a "listing" of acceptable "approved" manufacturers and/or products, then the bidder may base the bid on either the proprietary product or any from the "listing". Bidders may request approval prior to bid opening of non-listed items in accordance with the specifications. When proprietary names are used, and there are alternates on the bid form, then the bidder shall base his bid on the proprietary product or any from the "listing" of approved manufacturers and/or products. The bidder must furnish the specified or listed item regardless of whether or not they were included in his bid. The bidder shall be required to coordinate and pay for any conditions which are required to accommodate the listed or alternate item, including the reimbursement of other affected prime contractors.

No substitutions (alternatives) will be considered prior to receipt of Bids unless written request for approval has been received by the Architect only from prime Contract Bidders at least ten days prior to the date for receipt of Bids. Such requests shall be in accordance with substitution request procedure, and any other requirements at the Architect, Owner or Construction Manager's discretion.

In order to prequalify, all alternative Manufacturers' information should be submitted by a prime contract bidder and should include:

- Technical, warranty, and Manufacturer's data specified. A line-by-line comparison of all specified items in the Specification must be made. Submission must be made ten (10) days prior to Bid opening.
- Architect will review submission and any acceptable substitutions will be listed in an addendum. All manufacturers not specifically approved by addendum shall not be considered.
- Only manufacturers that are qualified prior to the Bid Opening will be considered acceptable Manufacturers.

10.1 The approval of a substitution shall be at the sole determination of the Architect and upon approval of the Construction Manager and Owner, if a proposed substitution (alternative) is approved prior to receipt of Bids, such approval will be set forth in an addendum. Bidders shall not rely upon approvals in any other manner. If a proposed substitution is not specifically approved by addendum they are rejected.

10.2 No substitutions (alternatives) will otherwise be considered after the Contract award.

- 10.3 No substitutions (alternatives) will be considered for pre-bid approval later than ten (10) days before bids are due.

11. SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.1 All subcontractors proposed for the project shall have been in business for a minimum of five (5) years and must have a successful record of completing, at a minimum, five (5) projects of similar size and cost. Subcontractors must also have business insurance, workmen's compensation, adequate resources of man power, tools and equipment and must be defined as an independent contractor by the IRS.
- 11.2 At the Owner's request the identity of certain Subcontractors, Suppliers and other persons or organizations (including those who are to furnish the principal items of material and equipment) is to be submitted to Owner in advance by the apparent Successful Bidder, and any other Bidder so requested. Within a maximum of five (5) days after the Bid Opening, the apparent Successful Bidder, and any other Bidder so requested shall submit to Owner a list of all such Subcontractors, Suppliers and other such persons or organizations proposed for those portions of the Work for which such identification is required. An experience statement shall accompany such list with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, person or organization if requested by Owner. If Owner and Construction Manager, after due investigation, have reasonable objections to any proposed Subcontractor, Supplier, and other person or organization, then Owner may, before the Notice of Award is given, request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid Price.
- 11.3 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposed to use acceptable Subcontractors, Suppliers, and other persons and organizations. Declining to make requested substitutions will not constitute grounds for sacrificing the Bid Security of any Bidder.

12. BID FORM

- 12.1 THE BID FORM SHALL NOT BE ALTERED. ALTERED BID FORMS MAY BE CONSIDERED NON-RESPONSIVE AND MAY BE REJECTED.**
- 12.2 The Bid Form is included with the Bidding Documents; NO additional copies will be provided. Bidders are to complete the bid forms electronically within PennBid.
- 12.3 All information should be entered directly into PennBid excel forms as it relates to monies on base bid, alternates , unit prices etc. The only item required on the uploaded Bid Form is contractor name and signature page.
- 12.4 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by the evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

- 12.5 Bids by partnership must be executed in the partnership name and signed by a partner, whose title must appear under the signature, and the official address of the partnership must be shown below the signature.
- 12.6 All names must be typed or printed below the signature.
- 12.7 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on Penn Bid Acknowledgement). Properly issued Addenda shall be binding upon all Bidders, regardless of whether a Bidder fails to acknowledge receipt.
- 12.8 The address and telephone number for communications regarding the Bid must be shown.
- 12.9 If there is a discrepancy between the written words and numerical figures written on the bid form, the written words shall prevail.

13. SUBMISSION OF BIDS

- 13.1 Bids shall be submitted electronically via PennBid. Bids submitted by any other means shall not be considered. One copy of all Documents required to be submitted at the time of Bid shall be submitted as part of the uploaded "Documents".
- 13.2 Submission required as follows:

Submissions required with the Bid

- A. ☐ Form of Proposal, fully executed and notarized
- B. ☐ Bid Bond or Certified Check or Cashier's Check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
- C. ☐ Non-Collusion Affidavit (notarized)
- D. ☐ Public Works Employment Verification Form

Submissions required after Award of the Contract (Within 48 hours of request from CM)

- A. ☐ Bidder's Qualifications, AIA A305, completed
- B. ☐ Performance Bond and Payment Bond
- C. ☐ Certificate of Insurance
- D. ☐ A Schedule of Values.
- E. ☐ List of Subcontractors.

F. [] Safety & Health Management Plan

14. MODIFICATIONS AND WITHDRAWAL OF BIDS

- 14.1 Bidders may modify or withdraw their bid within PennBid at any time prior to the due date and time listed within the Invitation to Bid.
- 14.2 Bids shall be irrevocable for ninety (90) days after the actual day of opening thereof unless delayed by the required approval of another governmental agency, the sale of bonds or the award of a grant, in which case, Bids shall be irrevocable for 120 days after Bid opening. Extensions of the date for the award of contract may be made by the mutual written consent of Owner and the lowest responsible and responsive Bidder.
- 14.3 Neither the designation of the apparent lowest responsible Bidder, nor the issuance of a Notice of Intent to Award to the Bidder so designated shall operate to release any other Bidder from its Bid. Each such other Bidder, unless earlier released from its Bid by specific action of the Owner, shall remain bound by its Bid until the earlier of (1) the date of actual execution by Owner of the Agreement Between Owner and Contractor with the Bidder whom the Award of Contract has been made, or (2) the expiration of the firm Bid period stipulated above.
- 14.4 Negligence by the Bidder in preparing his proposal confers no right of withdrawal or modification of his proposal after such proposal has been opened. No claims on account of mistakes or omissions of any proposal will be considered. Notwithstanding the above, a Bidder may withdraw his proposal within two (2) business days after the Bid opening time in accordance with the Public Contracts – Withdrawal of Bids Law, Act of January 23, 1974, P.L. 9, No. 4, 73 P.S. §1601 et seq., as amended. A Bid which has been opened may be withdrawn only in accordance with the causes set forth in said Act and for no other reasons. Strict compliance with said Act is required to withdraw a Bid after opening.

15. OPENING OF BIDS

Bids will be opened and (unless obviously non-responsive) read aloud publicly. An abstract of the amounts of the Base Bids and major alternate(s) (if any) will be made available to Bidders after the opening of the Bids via PennBid.

16. AWARD OF CONTRACT

- 16.1 The Owner's intent is to enter into Contracts with the lowest responsible and qualified Bidders.

Bid forms shall NOT BE ALTERED IN ANY MANNER. Owner reserves the right to reject any and all bids, to waive all informalities or technicalities and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional bids. Also, Owner reserves the right to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or

fails to meet any other pertinent standard or criteria established by Owner. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the correct sum.

- 16.2 In evaluating Bids, Owner will consider the qualifications of such Bidders (see Article 3), whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 16.3 Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons or organizations proposed for any portions of the Work requested by Owner. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.
- 16.4 Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualification and financial ability of Bidders, Subcontractors, Suppliers, and other persons or organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.
- 16.5 If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Intent to Award within ninety (90) days after the day of Bid Opening unless delayed by the required approval of another governmental agency.
- 16.6 The Owner reserves the right to waive non-material defects in any bid if it determines that it is in its best interest to do so. The Owner reserves the right to reject all bids.

17. CONTRACT SECURITY & INSURANCE

The General Conditions and the Supplementary Conditions set forth Owner's requirements as to Performance, Payment Bonds and Insurance requirements.

- 17.1 The apparent low bidder must provide Payment and Performance Bonds in the form included in the Contract Documents within 10 days of the issuance of Notice of Intent to Award. Other bond forms will not be accepted. Failure of the apparent low bidder to provide original executed Payment and Performance Bonds in the required form within the required time will result in forfeiture of the Bid Security.

18. SIGNING OF AGREEMENT

When Owner issues Intent to Award to the Successful Bidder, the Bidder shall within ten (10) days thereafter, deliver to the Owner, four (4) original copies of the required Bonds and Insurance Certificates. Within ten (10) days thereafter, the Construction Manager will deliver four (4) agreements to Bidder. The Bidder shall sign the agreements and return all original documents to the Construction Manager. The Construction Manager will forward the agreements to the Owner for signature. The Owner will return one (1) signed agreement to the Bidder and Construction Manager.

19. RETAINAGE

Retainage will be in accordance with the Contract Documents.

20. PREVAILING WAGES

Pennsylvania Prevailing Wage Predetermination rates will apply to this Project. The Bidder shall keep an accurate record showing the name, craft and actual hourly rate of wage paid to each workman employed by him and such record shall be preserved for two years from date of payment. The records shall be open at all reasonable hours to the inspection of the public body awarding the Contract and to the Secretary of the Department of Labor and Industry. The Architect and Construction Manager assume no responsibility to verify or document records of the Bidder or Contractor(s). Any failure of the Contractor or notification to the same in regards to wage rates or payment will require the Owner to withhold payments until the record is resolved.

21. COMPETENT WORKMEN

No person shall be employed to perform any work under the Contract if they are not legally eligible to be employed under applicable state and federal law or if they are not a trained, competent workman or mechanic, as applicable. For purposes of this Section, no workman or mechanic, as applicable, shall be regarded as competent unless he shall be duly skilled in the applicable branch of labor.

- 21.1 The Commonwealth of Pennsylvania enacted Act 127 of 2012, known as the Public Works Employment Verification Act ('the Act') which requires all public work contractors and subcontractors to utilize the Federal Government's E-Verify system to ensure that all employees performing work on public work projects are authorized to work in the United States.

The Department defines a "Public Work" to be construction, reconstruction, demolition, alteration and/or repair work other than maintenance work, done under contract and paid for in whole or in part out of the funds of a public body where the estimated cost of the total project is in excess of twenty-five thousand dollars (\$25,000) but shall not include work performed under a rehabilitation or manpower training program.

The Department of General Services' Public Works Employment Verification Compliance Program is responsible for the administration, education and enforcement of the Public Works Employment Verification Act 127 of 2012. It provides contractors and subcontractors with educational outreach, conducts investigations when complaints are received and random audits to ensure compliance with the requirements of this Act.

Please direct your questions to the Public Works Employment Verification Compliance Office

Mail: Department of General Services Public Works
Employment Verification Compliance Office Room 105 Tent Bldg.
18th & Herr Streets
Harrisburg, PA 17125
Fax: 717-214-3669

Statement of Policy as published in the Pennsylvania Bulletin, December 29, 2012, and effective January 1, 2013. Public Works Employment Verification Form attached.

- 21.2 Before commencing the Work, Contractor shall supply the Owner with state and federal criminal history reports and child abuse clearances for all employees, agents and subcontractors who will be on the Owner's property. The original clearances must be presented to the Owner prior to each employee, agent or subcontractor coming on the Owner's property. All such clearances shall be dated no earlier than one year prior to the date of presentation to the Owner. The Owner shall retain a copy of all such clearances in its file. Notwithstanding any other provision of the Contract, violation of this provision shall constitute grounds for immediate termination of the contract by the Owner.

22. PENNSYLVANIA HUMAN RELATION ACT 222:

- 22.1 Human Relations Act: 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. Your attention is directed to the language of the Commonwealth's non-Discrimination Clause in 16 PA Code 49.101.

23. NON-DISCRIMINATION / SEXUAL HARASSMENT:

- A. In the hiring of any employees for the manufacture of supplies, performance of work, or any other activity required under the Contract or any subcontract, the GRANTEE, subcontractor or any person acting on behalf of the GRANTEE or subcontractor shall not 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.
- B. Neither the CONTRACTOR nor any subcontractor nor any person on their behalf shall in any manner discriminate against or intimidate any employee involved in the manufacture of supplies, the performance of work or any other activity required under the Contract on account of gender, race, creed or color.
- C. The CONTRACTOR and any subcontractors shall establish and maintain a written sexual harassment policy and shall inform their employees of the policy. The policy must contain a notice that sexual harassment will not be tolerated and employees who practice it will be disciplined.
- D. The CONTRACTOR shall not discriminate by reason of gender, race, creed, or color against any subcontractor or supplier who is qualified to perform the work to which the contract relates.
- E. The CONTRACTOR and each subcontractor shall furnish all necessary employment documents and records to and permit access to its books, records, and accounts by the contracting officer and the Department of General Services' Bureau of Contract Administration and Business Development for purposes of investigation to ascertain compliance with the provisions of this Nondiscrimination/Sexual Harassment Clause. If the CONTRACTOR or any subcontractor does not possess documents or records reflecting the necessary information requested, it shall

furnish such information on reporting forms supplied by the contracting officer or the Bureau of Contract Administration and Business Development.

- F. The CONTRACTOR shall include the provisions of this Nondiscrimination/Sexual Harassment Clause in every subcontract so that such provisions will be binding upon each subcontractor.
- G. The Commonwealth may cancel or terminate the Contract, and all money due or to become due under the Contract may be forfeited for a violation of the terms and conditions of this Nondiscrimination/Sexual Harassment Clause. In addition, the agency may proceed with debarment or suspension and may place the GRANTEE in the Contractor Responsibility File.

24. 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 provision of Federal and State statutes, rules and regulations dealing with the prevention of environmental pollution and the preservation of public natural resource that affect the Project on which bids are being received.
- B. The Bidder shall thoroughly acquaint itself 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, rule or regulations become effective after date of receipt of bids, upon receipt of documentation which causes the Contractor to perform additional work, the Owner may issue a change order or deviation request setting forth the additional work that must be undertaken. This change order or deviation request shall not invalidate the Contract.
- C. It is the responsibility of the Contractor to determine what local ordinances, if any, will affect its work. They 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 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 price bid, even though document of such local controlling agencies are not listed herein.

25. EROSION CONTROL

- A. General Contractor shall comply with all rules and regulations of Chapter 102, Title 25 of Pennsylvania Soil Erosion and Sedimentation Control.
- B. The plan shall be maintained at site and shall indicate how the Contractor plans to control erosion caused by storm water and prevent silt and sedimentation being distributed off site.
- C. Control shall be provided by channels, dikes, sedimentation basins, protection of stockpiled or uncontrolled soil or any other means necessary, all in accordance with the requirements of the Pennsylvania Department of Environmental Resources.

26. PUBLIC WORKS CONSTRUCTION CONTRACTS

In consideration of the funds awarded and activities funded under this CONTRACT which involve construction, reconstruction, alteration, repair, improvement, or maintenance of a building, structure, or improvement ("The Work"), the CONTRACTOR agrees to perform in accordance with the following:

- A. Steel Products Procurement Act. In the performance of any contract awarded for Work, the contract, subcontractors, materialmen, or suppliers shall use only steel products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated, or otherwise similarly processed, or processed by a combination of two or more of such operations, from steel made in the United States by the open hearth, basic oxygen, electric furnace Bessemer, or other steel-making process. Steel products include not only cast-iron products, but also machinery and equipment listed in United States Department of Commerce Standard Industrial Classifications 25 (furniture and fixtures), 35 (machinery, except electrical), and 37 (transportation equipment), and made of, fabricated from, or containing, steel components. If a product contains both foreign and United States steel, it shall be determined to be a United States steel product only if at least 75 percent of the cost of the articles, materials, and supplies have been mined, produced, or manufactured, as the case may be, in the United States. Transportation equipment shall be determined to be a United States steel product only if it complies with Section 165 of P.L. 97-424 (96 Stat. 2136).

When unidentified steel products are supplied under a contract for Work, before any payment will be made, the contractor must provide documentation including, but not limited to, invoices, bills of lading, and mill certification that the steel was melted and manufactured in the United States. If a steel product is identifiable from its face, the contractor must submit certification which satisfies the using agency that the contractor has fully complied with this provision. OB shall not provide for or make any payments to any person who has not complied with the Steel Products Procurement Act (hereinafter referred to as the "SPPA"). Any such payments made to any person by OB which should not have been made as a result of the SPPA shall be recoverable directly from the contractor, subcontractor, manufacturer, or supplier who did not comply with the SPPA.

In addition to withholding of payments, any person who willfully violates any of the provisions of the SPPA shall be prohibited from submitting any bids to any public agency for a period of five years from the date of the determination that a violation has occurred. In the event the person who violates the provisions of the SPPA is a subcontractor, manufacturer, or supplier, such person shall be prohibited from performing any work for, or supplying any materials to, a public agency for a period of five years from the date of the determination that a violation has occurred.

The CONTRACTOR shall include the provisions of the SPPA in every subcontract and supply contract so that the provisions of the SPPA shall be binding upon each subcontractor and supplier.

- B. Trade Practices Act. In accordance with the Trade Practices Act of July 23, 1968, P.L. 686 (71 P.S. §773.101 et seq.), the CONTRACTOR cannot and shall not use or permit to be used in the Work any aluminum or steel products made in a foreign country which discriminates against aluminum or steel products manufactured in Pennsylvania. The countries of Argentina, Brazil, South Korea, and Spain have been found to discriminate against certain products manufactured

in Pennsylvania. Therefore, the purchase or use of those countries' products, as listed below, is not permitted.

- a. Argentina: carbon steel wire rod and cold-rolled carbon steel sheet.
- b. Brazil: welded carbon steel pipes and tubes; carbon steel wire rod; tool steel; certain stainless-steel products, including hot-rolled stainless-steel bar; stainless steel wire rod and cold-formed stainless-steel bar; prestressed concrete steel wire strand; hot rolled carbon steel plate in coil; hot-rolled carbon steel sheet; and cold-rolled carbon steel sheet.
- c. South Korea: welded carbon steel pipes and tubes; hot-rolled carbon steel plate; hot-rolled carbon steel sheet; and galvanized steel sheet.
- d. Spain: certain stainless-steel products, including stainless steel wire rod, hot-rolled stainless-steel bars; and cold-formed stainless-steel bars; prestressed concrete steel wire strand; and certain steel products, including hot-rolled steel plate, cold-rolled carbon steel plate, carbon steel structural shapes, galvanized carbon steel sheet, hot-rolled carbon steel bars, and cold-formed carbon steel bars.

Penalties for violation of the above paragraphs may be found in the Trade Practices Act, which penalties include becoming ineligible for public works contracts for a period of three years.

This provision in no way relieves the CONTRACTOR of responsibility to comply with those provisions of this CONTRACT which prohibit the use of foreign-made steel and cast-iron products.

- C. Public Works Contractor's Bond Law of 1967. Prior to the award of any contract for any Work on the Project, the contractor to whom the contract is to be awarded must furnish the following bonds which shall become binding upon the award of such contract:
 1. A performance bond at 100 percent of the contract amount, conditioned upon the faithful performance of the contract in accordance with the plans, specifications, and conditions of the contract. Such bond shall solely for the protection of the contracting body which awarded said contract.
 2. A payment bond at 100 percent of the contract amount. Such bond shall be solely for the protection of claimants supplying labor or materials to the CONTRACTOR, its contractor or to any of its subcontractors, in the prosecution of the work provided for in such contract, and shall be conditioned for the prompt payment of all such material furnished or labor supplied or performed in the prosecution of the work. "Labor or materials" shall include public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the site.
- D. Pennsylvania Prevailing Wage Act. The CONTRACTOR, its subgrantees, contractors and subcontractors shall comply with the provisions, duties, obligations, remedies, and penalties of the Pennsylvania Prevailing Wage Act, 42 P.S. § 165-1 et seq. which is incorporated herein by reference as if fully set forth herein. The general prevailing minimum wage rates, as determined

by the Secretary of Labor and Industry shall be paid for each craft or classification of all workmen needed to perform work on the Project during the term hereof for the locality in which the work is to be performed.

27. SEVEREABILITY

- A. Should any section or any part of any section of this CONTRACT be rendered void, invalid, or unenforceable by any court of law, for any reason, such a determination shall not render void, invalid, or unenforceable any other section or part of any section of this CONTRACT.

28. AMERICANS WITH DISABILITIES ACT

During the term of this CONTRACT, the CONTRACTOR agrees as follows:

- A. Pursuant to federal regulations promulgated under the authority of The Americans with Disabilities ACT, 28 C.F.R. § 35.101 et. Seq., the CONTRACTOR understands and agrees that no individual with a disability shall, on the basis of the disability, be excluded from participation in this CONTRACT or from activities provided for under this CONTRACT. As a condition of accepting and executing this CONTRACT, the CONTRACTOR agrees to comply with the General Prohibitions Against Discrimination, 28 C.F.R. § 35.130, and all other regulations promulgated under Title II of The Americans with Disabilities Act which are applicable to all benefits, services, programs, and activities provided by the COMMONWEALTH through contracts.
- B. The CONTRACTOR shall be responsible for and agrees to indemnify and hold harmless the COMMONWEALTH from all losses, damages, expenses, claims, demands, suits, and actions brought by any party against the COMMONWEALTH as a result of the CONTRACTOR failure to comply with provisions of paragraph A above.

29. HEALTH AND SAFETY

Bidders shall comply with the provisions of the Occupational Safety and Health Administration, Federal Act 91-596 of December 29, 1970, and with any other safety and health regulations for district in which the Work is performed.

30. BONDS AND INSURANCE

- 30.1 The Bidder will be required to furnish a Bid Bond, Performance Bond and Labor and Material Payment Bonds in the amount of one hundred percent (100%) of the Contract Price in the form provided in the Contract Documents. Said Sureties shall be listed on the current Federal Register and have an AM Best rating of 'A-' or better and a financial rating of Class X or higher.
- 30.2 Insurance companies must be rated 'A-' or better in A.M. Best.
- 30.3 Bidder shall include the cost of the Bonds & Insurance in their Bid.
- 30.4 Bidder shall provide the insurance required in the General Conditions.

31. PRE-BID CONFERENCE

The Non-mandatory Pre-bid Conference will be held on the date and time listed on the Invitation to Bidders. Representatives of Owner, Construction Manager and Architect will be present to discuss the Project. Architect will transmit to all prospective Bidders of record such Addenda, as Architect considers necessary in response to questions arising at the Conference. Non attendees will not be permitted to bid.

32. ALTERNATES

All requested alternates as defined in Division 01 of the bid documents shall be bid. Provide prices for those alternates indicated on the Form of Proposal. Include changes to Contract Sum. Methods for bidding Alternates are as specified in Division 01.

- 32.1 The Bidder agrees to modify the base bid by the amounts stated for alternates as requested on the Bid Form and specified in the Bidding documents.
- 32.2 The Owner may accept or reject any or all of the alternates in any order.
- 32.3 Alternate work shall be completed within the same time frame as indicated on the Contract Documents for associated work. No alternate shall modify the project material allowances unless stated within the allowance description.
- 32.4 If there is no change in the contract amount for any alternate write NO CHANGE or zero (0) in the blank.
- 32.5 All alternates MUST be bid. If there is no bid for the Alternate, and if Owner selects alternate not bid, the bidder may not receive the award.
- 32.6 Enter the amount for each alternate on the line pre-marked as "ADD" or DEDUCT". Where both the words "ADD and "DEDUCT" are provided for an alternate, strike through one of the words so that the appropriate word remains.
- 32.7 The failure to enter an amount in the blanks for an alternate shall be treated conclusively as a Bid of zero dollars for the work described in the alternate.

33. UNIT PRICES

Provide unit prices filled-in on the form of proposal in accordance with requirements specified in the proposal/bid form and bidding requirements. Unit costs will be used for adjustment of the Contract Sum if any are required. The Owner reserves the right to reject any unit prices bid.

34. ALLOWANCES

Include all allowances listed on the Bid Form and project drawings and specifications in the base bid price. Do not adjust allowances for any alternates unless specifically listed in the alternate. All allowances MUST include all overhead and profit.

35. PROJECT FINANCING

- A. The work to be done under this Contract is public work and may be financed in whole or part by the Owner (a public body) by issuance of bonds or procurement of grants, which are subject to various qualifications and restrictions. The Owner, in such case and in good faith, intends to consummate such financing, but its ability to do so is subject to many factors beyond its control. It is therefore expressly understood and agreed to by each bidder that, notwithstanding any other provision of the Contract Documents, the Owner may at any time cancel any award made by it, or cancel any contract entered into with any bidder, without liability to the bidder, at any time before the bidder has been given written notice to proceed and has actually begun Work under the Contract if financing satisfactory to the Owner cannot reasonably be consummated as contemplated, or if any court of competent jurisdiction shall enjoin or otherwise prohibit the Owner from proceeding with the Work. The bidder shall have the right to cancel the Contract in accordance with the Pennsylvania Commonwealth Procurement Code, 62 Pa.C.S. § 3911.
- B. This Owner intends to apply for the Redevelopment Assistance Capital Program (RACP). It is intended that the Project is being financed in part by this program. The RACP program is a grant program, and it is further described in the Attachments to this Section. The Project must comply with all requirements for this grant program. The Grant Agreement between the Owner (Grantee) and the Commonwealth of Pennsylvania (Grantor) sets forth the following requirements incumbent upon the construction Contractors:
1. RACP Program Guidelines attached in spec section 008020
 2. The Contractor, for itself and its Subcontractors and suppliers, agrees to notify the Owner and Architect within 7 days following any suspension or debarment by the Commonwealth of Pennsylvania, the federal government, or any other state or governmental entity.
 3. The Contractor agrees that records related to or arising out of the Grant Agreement between the Owner and the Commonwealth of Pennsylvania ("the Commonwealth") are subject to request made pursuant to the Pennsylvania Right-to-Know Law, 65 P.S. § § 67.101-3104, ("RTKL"). Exhibit 'B' attached hereto and made a part hereof is a true and correct copy of that portion of the Grant Agreement setting forth the RTKL provisions, with which Contractor agrees to abide. References therein to "Subgrantee" refer to the Contractor.
 4. The Contractor agrees to allow the Owner, or its authorized representative, access to review the pertinent records and other documents of the Contractor and its subcontractors for the Owner's purpose in performing a final audit for closeout of the Grant. Contractor and all subcontractors shall cooperate fully with Owner in this task.

END OF SECTION 00.2113

SECTION 00.2625 - SUBSTITUTION REQUEST FORM

- A. Submissions for approved substitutions will be permitted and processed in accord with Article 10 of Document 002113 "Instructions to Bidders".
- B. Submissions will be "received dated" immediately upon arrival at the office of Alloy5 Architecture.
- C. All Submissions must be received ten (10) days prior to bid or they may not be reviewed.
- D. Reviewer's General Criteria for review will be:
 - 1. Burden of proof of performance equality and completeness of this submittal is the responsibility of the submitter.
 - 2. Reviewers will not be required to complete the submittal, that is, select from options or between models and lines of products.
 - 3. Reviewer will not be required to seek information from the manufacturer's literature on file in the office, or information from other locations.
 - 4. Product must be equal, or better, in those features and performance which specified product provides.
 - 5. When in the reviewer's opinion, significant deficiencies are established, further review of submitted data is not required.
- G. Reviewer will note action (approval or disapproval), the date, and their initials.
- H. If a submittal is disapproved, reviewer will make notations that will be adequate to guide a later reviewer to the same conclusion. Sample notations may be: "Submittal vague", "incomplete", or "product equality not substantiated".
- I. Submittals received after closing time will be "received dated," marked "late", initialed, and filed without review.
- J. Submittals will be filed in the project file until completion of the project, then destroyed.
- K. Approval of a substitute item will be communicated to bidders in the form of an Addendum.

TO:

Alloy5 Architecture, LLC
530 West Broad Street
Bethlehem, PA 18018

PROJECT _____

PRIME BIDDER _____

CONTRACTOR/SUPPLIER _____

We hereby submit for consideration, the following product instead of specified item for above project:

SECTION/DRAWING	PARAGRAPH/DETAIL	SPECIFIED ITEM
_____	_____	_____

Proposed Substitution: _____

MANUFACTURER'S HOME OFFICE:

LOCAL REPRESENTATIVE:

Address: _____

Address: _____

Telephone: _____

Telephone: _____

Contact: _____

Contact: _____

Attached to this request is product data, specifications, performance tests and data, and color samples. The attached information also includes any modifications of the Contract Documents which would be required if this substitution is utilized for this Project.

The undersigned states that as a Prime Bidder on the above referenced Project the following statements are true.

1. The Prime Bidder has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
2. That the product manufacturer will provide the same warranty for the Substitution as for the specified Product.
3. That the use of this product will not have an adverse effect on any other trade or Prime Contractor or the Construction Schedule.
4. That the use of this product does not affect the dimensions shown on the Drawings unless specifically stated in the attached information.

Reason for Substitution:

ATTACHMENTS (If not applicable, write N/A in space provided)

- No. 1 Complete product data, including technical data and laboratory tests, if applicable.

- No. 2 Drawings indicating dimensional changes. _____
- No. 3 Complete description of changes to drawings and specifications which proposed substitution will require for its proper installation.

- No. 4 Necessary samples and substantiating data to prove equal quality, performance, and appearance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance. Differences in quality of materials and construction shall be indicated.
- No. 5 List of names and addresses of three similar projects on which product was used, date of installation, and Architect/Engineer's name, address, and telephone numbers.

Fill in blanks below *(Provide attachments if more space is necessary)*

- A. Does the substitution affect dimensions indicated on the Contract Drawings?
Yes _____ No _____ If yes, clearly indicate changes:

- B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

- C. What effect does substitution have on other trades, other contracts, and Contract Completion Date?

- D. What effect does substitution have on applicable code requirements?

- E. List differences between proposed substitution and specified item:

- F. Identify manufacturer's guarantees: _____

G. Identify cost impact; Provide attachments showing proposed credit:

Undersigned attests function and quality equivalent or superior to specified item.

CERTIFICATION OF EQUAL PERFORMANCE:

Submitted by: _____ Title: _____

Company: _____

Address: _____

Date: _____

Telephone: _____ E-mail: _____

Signature: _____

.....

For Use by the Architect/Engineer:

Accepted _____ Accepted as Noted: _____

Not Accepted _____ Received Too Late: _____

Reviewer: _____ Date: _____

REMARKS: _____

END OF SECTION 00.2625

DOCUMENT 003132 - GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.
- B. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the borings or that the strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.
- C. Soil-boring data for Project, obtained by the Civil Engineer and is available upon request.
- D. A geotechnical investigation report for Project, prepared by the Civil Engineer and is available upon request.
 - 1. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
 - 2. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.
- E. Related Requirements:

[Revise list below to suit Project.](#)

- 1. Document 002113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.

END OF DOCUMENT 003132



ECS Mid-Atlantic, LLC

Geotechnical Engineering Report

Upper Pottsgrove Municipal Complex

2290 Gilbertsville Road
Pottstown, Montgomery County, Pennsylvania

ECS Project Number 18:6488

January 16, 2025





ECS MID-ATLANTIC, LLC

Geotechnical • Construction Materials • Environmental • Facilities

January 16, 2025

Mr. Al Gryga, RLA, ASLA
Chester Valley Engineers, Inc.
112 Moores Road, Suite 200
Malvern, Pennsylvania 19355

ECS Project No. 18:6488

Reference: Geotechnical Engineering Report
Upper Pottsgrove Municipal Complex
2290 Gilbertsville Road
Pottstown, Montgomery County, Pennsylvania

Dear Mr. Gryga:

ECS Mid-Atlantic, LLC (ECS) has completed the subsurface exploration and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our Proposal No. 18:10529-GP, dated October 23, 2024. This report presents our understanding of the geotechnical aspects of the project, results of the field exploration, laboratory testing, and our design and construction recommendations.

It has been our pleasure to be of service to Chester Valley Engineers, Inc. during this phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase and to provide our services during construction phase operations as well to verify the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Mid-Atlantic, LLC

Kyle T. Eldridge
Geotechnical Project Manager I
keldridge@ecslimited.com



Digitally signed
by Derek G.
Ridinger
Date: 2025.01.16
09:59:29 -05'00'

Derek G. Ridinger, P.E.
Assistant Office Manager, Principal
dridinger@ecslimited.com

52-6 GRUMBACHER ROAD, YORK, PA 17406 • T: 717-767-4788

ECS Florida, LLC • ECS Mid-Atlantic, LLC • ECS Midwest, LLC • ECS Pacific, Inc. • ECS Southeast, LLC • ECS Southwest, LLP
ECS New York Engineering, PLLC - An Associate of ECS Group of Companies • www.ecslimited.com

"ONE FIRM. ONE MISSION."

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APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Exploration Location Diagram
- Subsurface Cross-Section(s)
- Geologic Survey Map
- Soil Survey Map

Appendix B – Field Operations

- Reference Notes
- Exploration Procedures
- Boring Logs
- Photographs

Appendix C – Laboratory Testing

- Laboratory Testing Summary
- Plasticity Chart(s)
- Grain Size Analysis/Analyses

EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

- The proposed building can be supported by conventional shallow foundations consisting of column and/or strip footings bearing on the existing soils. The foundations can be designed for an allowable soil bearing pressure of 3,000 psf based on anticipated design loads.
- Groundwater seepage into our borings was not observed during our exploration at the depths explored.
- Natural deposits of soils that meet the definition of Satisfactory Structural Fill do appear to be present on the site at possible excavation depths.
- Refusal was encountered at depths as shallow as approximately 3 feet below existing grade. Significant excavation difficulties which may slow down the construction process may occur, especially in areas of deep utility excavation and select foundation locations.

Refer to the text of the report for site specific design and construction recommendations.

1.0 INTRODUCTION

The purpose of this study was to provide geotechnical information for design and construction of a proposed township municipal complex at the project site. The recommendations developed for this report are based on project information supplied by Chester Valley Engineers, Inc.

Our services were provided in accordance with the Proposal No. 18:10529-GP, dated October 23, 2024, as authorized by Chester Valley Engineers, Inc., which includes our Terms and Conditions of Service.

This report contains the results of our subsurface exploration, site characterization, laboratory testing, engineering analyses, and recommendations for the design and construction of the proposed development.

This report includes the following:

- A review of area and site geologic conditions.
- A review of surface topographical features and site conditions.
- A brief review and description of our field procedures.
- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of subsurface soil stratigraphy with pertinent available physical properties.
- Final copies of our boring logs
- Discussion of site preparation including depth of removal of soil or rock and over-excavation.
- Discussion of groundwater concerns relative to the planned construction.
- Recommended allowable soil bearing pressure and recommendations for suitable shallow foundations and anticipated maximum settlement.
- Recommended frost depth.
- Recommendations regarding specifications for Structural Fill.
- Discussion of parameters for slab on grade construction and modulus of subgrade reaction.
- Recommendations for site seismic design coefficients based on the 2018 IBC parameters.
- Design and construction recommendations for below-grade wall construction.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The project site is located at the physical address of 2290 Gilbertsville Road in Pottstown, Montgomery County, Pennsylvania. The site is situated south of the intersection of Gilbertsville Road with East Moyer Road consisting of an open grass field with a residential property near the northern end of the site. At the time of exploration, the site was generally flat with drainage being promoted towards the site borders with a local topographic relief on the order of approximately ± 10 feet.

Refer to Figure 2.1.A and the Site Location Diagram in Appendix A for a detailed depiction of the project site location.



Figure 2.1.A – Site Location

2.2 PROPOSED CONSTRUCTION

Based on the *Construction Plans*, by Chester Valley Engineers, Inc., dated December 9, 2024, we understand that the proposed development consists of two (2) single-story structures associated with a proposed township municipal complex. Other site developments include pavement areas, a salt shed, and stormwater management (SWM) facilities. The following information explains our understanding of the structure and assumed loads:

DESIGN VALUES	
SUBJECT	DESIGN INFORMATION / EXPECTATIONS
Approximate Building Footprint	Administrative & Police Building: 10,500 SF
	Public Works Building: 7,300 SF
# of Stories	1 Story Above Grade
Usage	Municipal Complex
Column Loads	Not Provided – Estimated 50 kips maximum

DESIGN VALUES	
SUBJECT	DESIGN INFORMATION / EXPECTATIONS
Wall Loads	Not Provided - Estimated 3.0 kips/lf maximum
Lowest Finish Floor Elevation (FFE)	Administrative & Police Building: 443.0 Feet
	Public Works Building: not provided estimated 446.0 Feet

If actual loads differ from those provided above, ECS should be contacted to provide updated recommendations, if applicable.

2.3 SITE GEOLOGY

According to the Geologic Map of Pennsylvania (1980)¹, the site is underlain by the Brunswick Formation. Based on the *Engineering Characteristics of the Rocks of Pennsylvania*², the Brunswick Formation is composed of reddish-brown shale, mudstone, and siltstone. Minor amounts of green and brown shale and interbedded red argillite are also present. The formation is well bedded in a thin to flaggy manner. Jointing and fracturing has a moderately developed, steeply dipping, closely spaced blocky pattern. Moderate resistance to weathering leads to a range in weathered fragment sizes from pencil-like to irregularly shaped blocks.

It should be noted that the Diabase formation is mapped directly west of the site. The Diabase formation is a dark gray to black, dense, and very fine grained, and consists of 90 to 95 percent labradorite and augite. The joints have blocky pattern; well developed; moderate distance between fractures. The bedrock formation is highly resistant; slightly weathered to a shallow depth. This formation possesses fair surface drainage. Joint openings provide a very low secondary porosity and low permeability. The bedrock is difficult to excavate with large boulders being a problem with an associated slow drilling rate. The cut-slope and foundation stability provided by this bedrock is good.

2.4 SOIL SURVEY MAPPING

Based on our review of the Soil Survey (USDA - Natural Resources Conservation Service (websoilsurvey.nrcs.usda.gov), the site soils are mapped as Lehigh silt loam, 0 to 8 percent slopes. This soil type is described as having the following properties:

SOIL MAPPING SUMMARY						
Mapped Soil Unit	Soil Unit Symbol	Origin/Type	Depth to Restrictive Feature	Depth to Water Table	Hydrologic Soil Group	KSat (in/hr)
Lehigh silt loam, 0 to 8 percent slopes	LhA LhB	Residuum weathered from porcellanite	40 to 60 inches to lithic bedrock	About 6 to 36 inches	C/D	(0.06 – 0.20)

¹ Berg, T. M., Edmunds, W. E., Geyer, A. R., and others, compilers, 1980, Geologic map of Pennsylvania (2nd ed.): Pennsylvania Geological Survey, 4th ser., Map 1, 3 sheets, scale 1:250,000

² Geyer, A. R., and Wilshusen, J. P., (1982), *Engineering Characteristics of the Rocks of Pennsylvania*. Bureau of Topographic and Geologic Survey.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled Subsurface Exploration Procedure. Our scope of work included drilling a total of 10 geotechnical borings. Our borings were located with a handheld GPS unit and their approximate locations are shown on the Exploration Location Diagram in Appendix A.

3.1 SUBSURFACE CHARACTERIZATION

The following sections provide generalized characterizations of the soil strata. Please refer to both the Subsurface Cross-Sections in Appendix A and the boring logs in Appendix B.

SUBSURFACE STRATIGRAPHY	
Stratum	Description
n/a	Surficial Material: Topsoil Thickness 2.0 inches
I	Sandy Lean CLAY (CL) or SILT (ML), dark gray, dark brown, orangish brown, moist, soft to very stiff
II	Clayey GRAVEL (GC), dark gray, dark brown, orangish brown, moist, loose to very dense
III	Weathered Siltstone (WR) sampled as CLAYEY GRAVEL, dark gray, moist, very dense
IV	Siltstone bedrock, moderately weathered, hard, highly fractured/jointed, dark gray and red, resulted in auger refusal as shallow as 3.0 feet in B-02.

3.2 GROUNDWATER OBSERVATIONS

Groundwater was not encountered during our subsurface exploration at the locations and depths explored. Boreholes were left open for a period of up to 4 hours to observe signs of water seepage. Variations in the long term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors.

3.3 LABORATORY TESTING

Each sample was visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) including USCS classification symbols. After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

The laboratory testing performed by ECS for this project consisted of selected tests performed on samples obtained during our field exploration operations. Moisture (ASTM D2216), Grain Size (ASTM D6913), and Atterberg Limits (ASTM D4318) were performed on representative soil samples obtained from the borings in order to aid in classifying soils according to the Unified Soil Classification System

(USCS) and to quantify and correlate engineering properties. The laboratory results can be found in Appendix C.

Soil samples from this exploration program will be retained in our laboratory for a period of 60 calendar days from date of collection, corresponding to the date of completion indicated on the exploration logs. After this time, the samples will be discarded unless other instructions are received from you regarding their disposal in advance.

4.0 DESIGN RECOMMENDATIONS

4.1 FOUNDATION DESIGN

Provided subgrades and Structural Fills are prepared as discussed herein, the proposed structures can be supported by conventional shallow foundations consisting of column and continuous wall footings. The design of the foundations shall utilize the following parameters:

FOUNDATION DESIGN PARAMETERS		
Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure ¹	3,000 psf	3,00 psf
Acceptable Bearing Soil Material	Stratum I, II or Structural Fill	Stratum I, II or Structural Fill
Minimum Width	24 inches	18 inches
Minimum Footing Embedment Depth for Interior Foundations (below slab or finished grade)	24 inches	24 inches
Minimum Footing Embedment Depth for Exterior Foundations (below slab or finished grade)	36 inches	36 inches
Estimated Total Settlement (max.)	1 inch	1 inch
Estimated Differential Settlement	Less than ½ inch between columns	Less than ½ inch over 35 feet

Note¹: Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.

Most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. If soft soils, unsuitable existing fill, or otherwise unsuitable soils are observed at the footing bearing elevations, the unsuitable soils should be undercut and removed.

Foundation undercut excavations, if required, should be widening by 1 foot on each side for every foot of over excavation (equivalent to a 1(H):1(V) slope for improved bearing area) where overexcavation exceeds 2 feet in depth. The undercut areas should be backfilled with Structural Fill (such as 2A aggregate) and compacted under engineering review until the designed bearing elevation has been reached. As an alternate, lean concrete ($f'_c=1,000$ psi) may be used to backfill the undercut. If lean concrete is used, the excavation should be 6 inches larger than the footing on each side and no additional lateral overexcavation is necessary.

bedrock encountered prior to reaching the designed bottom of footing elevations should be overexcavated a minimum of 6 inches below the proposed footing elevations and replaced with compacted 2A aggregate. Transition zones from rock to soil should incorporate a minimum of 15 lineal feet of footing with overexcavation and replacement with 2A aggregate to a minimum depth of 1 foot to reduce the potential for differential settlement in the soil section.

4.2 FLOOR SLABS

Provided subgrades and Structural Fills are prepared as discussed herein, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade). Based on the anticipated lowest finished floor elevations for the proposed buildings, it appears that the slabs will bear on newly compacted Structural Fill, *Stratum I – CL*, or *Stratum II - GC*. The following graphic depicts our soil-supported slab recommendations:

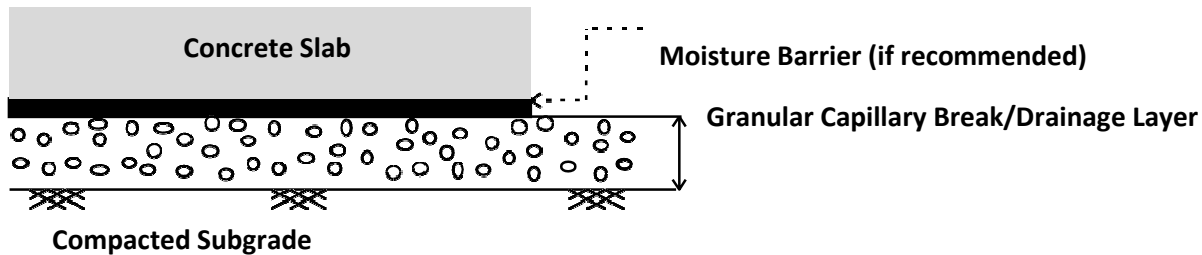


Figure 4.2.A

1. Drainage Layer Thickness: 4 inches minimum recommended
2. Drainage Layer Material: Coarse Graded Aggregate
3. Subgrade compacted to **95%** maximum dry density in Accordance with ASTM D698

Soft or yielding soils may be encountered in some areas. Those soils should be removed and replaced with compacted Structural Fill in accordance with the recommendations included in this report.

Subgrade Modulus: Provided the Structural Fill and Granular Drainage Layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 150 pci (lbs./cu. inch). The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

Vapor Barrier: Before the placement of concrete, a moisture barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a moisture barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop down footing/monolithic slab configuration, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

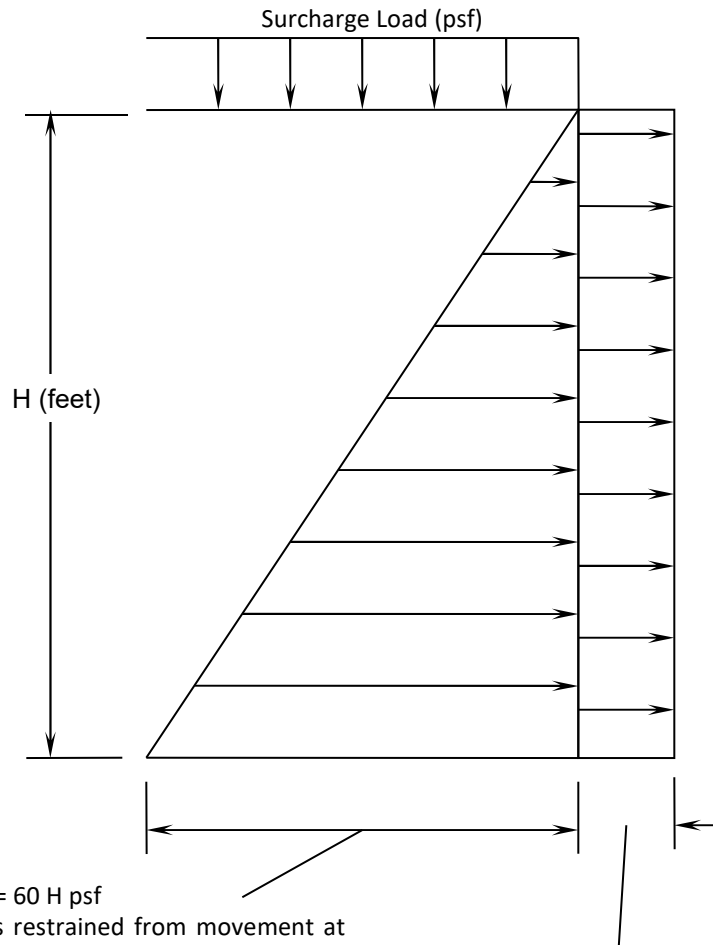
4.3 BELOW GRADE WALLS

We recommend that below grade walls be designed to withstand at-rest lateral earth pressures and surcharge loads from adjacent building foundations, and/or streets. These recommendations apply to a “drained” condition which is where there is drainage material behind below grade walls that prevents hydrostatic water pressures on the back of the below grade wall.

To accomplish a drained condition, drainage materials such as a free draining gravel, geocomposite drainage panels, weep holes, and an underslab drainage system should be used.

We recommend that walls that are restrained from movement at the top be designed for a linearly increasing lateral earth pressure. The following Figure depicts our recommended at-rest lateral earth pressure condition for a “drained below-grade wall” with restrained wall top:

This diagram is not suitable for the design of Support of Excavation or temporary shoring systems.



Surcharge loads imposed within a 45-degree slope of the base of the wall should be considered in the below grade wall design. The influence of these surcharge loads on the below grade walls should be based on an at-rest pressure coefficient, k_0 , of 0.5 in the case of restrained walls.

4.4 SEISMIC DESIGN CHARACTERISTICS

The International Building Code (IBC) 2018 requires site classification for seismic design based on the upper 100 feet of a soil profile. At least two methods are utilized in classifying sites, namely the shear wave velocity (v_s) method and the Standard Penetration Resistance (N-value) method. The latter method (Standard Penetration Resistance) was used in classifying this site.

SEISMIC SITE CLASSIFICATION			
Site Class	Soil Profile Name	Shear Wave Velocity, Vs, (ft./s)	N value (bpf)
A	Hard Rock	$V_s > 5,000$ fps	N/A
B	Rock	$2,500 < V_s \leq 5,000$ fps	N/A
C	Very dense soil and soft rock	$1,200 < V_s \leq 2,500$ fps	>50
D	Stiff Soil Profile	$600 \leq V_s \leq 1,200$ fps	15 to 50
E	Soft Soil Profile	$V_s < 600$ fps	<15

Based upon our interpretation of the subsurface conditions, the appropriate Seismic Site Classification is "C" as shown in the preceding table.

The Site Class definition should not be confused with the Seismic Design Category designation which the Structural Engineer typically assesses. If a higher site classification is beneficial to the project, we can provide additional testing methods that may yield more favorable results.

4.5 PAVEMENTS

Subgrade Characteristics: Based on the results of our borings and test pits, it appears that the pavement subgrades in cuts will consist mainly of Gravel or Clay (GC/CL) materials blended with varying percentages of rock fragments.

California Bearing Ratio (CBR) testing was not performed as part of this study. Therefore, we have assumed a CBR value of 3% for preliminary design purposes.

Anticipated traffic loading was not provided, and therefore, we have assumed approximate equivalent axle loadings of 10,000 and 50,000 for light-duty and heavy-duty pavements, respectively. In addition, we have assumed an initial serviceability of 4.2, terminal serviceability of 2.2, a reliability of 90 percent, a standard deviation of 0.45 for flexible pavements, and a design life of 20 years. The design analyses for pavements have been based on methodology from the American Association of State Highway and Transportation Officials' (AASHTO) Guide of Design of Pavement Structures, 1993 and guidelines established for SUPERPAVE as outlined in the Pavement Design Guide from the Pennsylvania Asphalt Pavement Association. For preliminary design the general pavement sections below can be considered and are guidelines that may or may not comply with local jurisdictional minimums.

MATERIAL	FLEXIBLE PAVEMENT	
	Light Duty	Heavy Duty
Asphaltic Wearing Course (Superpave - 9.5mm)	1.5 inch	1.5 inch
Asphaltic Binder Course (Superpave - 19.0mm)	2.5 inch	-
Asphaltic Base Course (Superpave - 25.0mm)	-	3.5 inch
Crushed Stone Base	6.0 inch	8.0 inch

In general, heavy duty sections are areas that will be subjected to trucks, buses, or other similar vehicles including main drive lanes of the development. Light duty sections are appropriate for vehicular traffic and parking areas.

Large, front loading trash dumpsters frequently impose concentrated front wheel loads on pavements during loading. This type of loading typically results in rutting of asphalt pavement and ultimately pavement failures. For preliminary design purposes, we recommend that the pavement in trash pickup areas consist of a 6-inch thick, 4,000 psi, reinforced concrete slab over 6-inches of dense graded aggregate. When traffic loading becomes available ECS or the Civil Engineer can design the pavements.

Prior to subbase placement and paving, CBR testing of the subgrade soils (both natural and fill soils) should be performed to determine the soil engineering properties for final pavement design.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping vegetation, rootmat, topsoil, unsuitable existing fill, asphalt, and other soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits, and 5 feet beyond the toe of Structural Fills. Borings performed in “undisturbed” areas of the site contained an observed 2 inches of topsoil. Deeper topsoil or organic laden soils may be present in wet, low-lying, and poorly drained areas. Root balls for removed trees may extend as deep as about 2 feet and will require additional localized stripping depth to completely remove the organics. ECS should be retained to verify that topsoil and unsuitable surficial materials have been removed prior to the placement of Structural Fill or construction of structures.

5.1.2 Proofrolling

Prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons [e.g. fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying localized yielding materials.

Where proofrolling identifies areas that are unstable or “pumping” subgrade those areas should be repaired prior to the placement of subsequent Structural Fill or other construction materials. Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed unstable materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade.

5.2 EARTHWORK OPERATIONS

5.2.1 Rock Excavation

Bedrock was encountered in each boring performed as part of this exploration, signified by auger refusal. Rock coring was performed in B-02, B-05, and B-09, with samples indicating that the underlying rock is dominantly composed of siltstone that is moderately weathered, hard, highly fractured/jointed, and dark gray and red. The siltstone was encountered at depths as shallow as approximately 3 feet below existing grade. Significant excavation difficulties, which may slow down the construction process may be encountered, especially in areas of deep utility excavations and select foundation excavations.

Usually, rock saws employed for trench excavations are capable of exceeding our refusal depths by several feet, but with some difficulty. The use of hydraulic rams on heavy duty excavation equipment, or the use of blasting, should be anticipated. We do not recommend straight line interpolation of bedrock surfaces for the estimation of excavation quantities due to the variable bedrock surface that is common in this geology.

We recommend that no “rock” fills be placed, and that fills meet the grain size criteria provided. Rock fill consists of rock particles that have a high void content between the rock particles. Rock fills are not suitable for satisfactory long term performance. These rock materials can be blended with other soil types to form a suitable particle size distribution for reuse as Structural Fill as outlined above.

5.2.2 Structural Fill Materials

Prior to placement of Structural Fill, representative bulk samples (about 50 pounds) of on-site and/or off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications.

Satisfactory Structural Fill Materials: Materials satisfactory for use as Structural Fill should consist of inorganic soils with the following engineering properties and compaction requirements.

STRUCTURAL FILL INDEX PROPERTIES	
Subject	Property
Building and Pavement Areas (Fine-Grained Soils)	LL < 40, PI <20
Max. Particle Size	4 inches
Minimum Dry Density	105 pcf

STRUCTURAL FILL COMPACTION REQUIREMENTS	
Subject	Requirement
Compaction Standard	Standard Proctor, ASTM D698
Required Compaction	95% of Max. Dry Density
Moisture Content	±2 % points of the soil's optimum value
Loose Thickness	8 inches prior to compaction

On-Site Borrow Suitability: Natural deposits of soils that meet the definition of Satisfactory Structural Fill do appear to be present on the site at possible excavation depths.

Fill Placement: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and frozen or frost-heaved soils should be removed prior to placement of Structural Fill or other fill soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

5.2.3 Proposed Steepened Slopes

Slopes comprised of Structural Fill or in-situ natural soils may be constructed at a slope of 3(H):1(V) or flatter. Slopes steeper than 3(H):1(V) should be evaluated by ECS. Slopes should be properly vegetated to reduce the likelihood of surficial erosion and sloughing.

5.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick “mud mat” of “lean” concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: Most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. It is important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated.

Slab Subgrade Verification: Prior to placement of a drainage layer, the subgrade should be prepared in accordance with the recommendations found in **Section 5.1.2 Proofrolling**.

5.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our exploration are expected to be generally suitable for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Loose or unsuitable materials encountered should be removed and replaced with suitable compacted Structural Fill, or pipe stone bedding material.

Utility Backfilling: The granular bedding material (often AASHTO #57 stone) should be at least 4 inches thick, but not less than that specified by the civil engineer’s project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for Structural Fill and Fill Placement.

Utility Excavation Dewatering: It is possible that perched water may be encountered by utility excavations which extend below existing grades. It is expected that removal of perched water which seeps into excavations could be accomplished by pumping from sumps excavated in the trench bottom and which are backfilled with AASHTO No. 57 Stone or open graded bedding material. Should water conditions beyond the capability of sump pumping be encountered, the contractor should submit a Dewatering Plan in accordance with project specifications.

Excavation Safety: Excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The contractor’s responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor’s safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor’s activities; such responsibility is not being implied and should not be inferred.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by Chester Valley Engineers, Inc. If any of this information is inaccurate, either due to our interpretation of the documents provided or if the site's design changed, ECS should be contacted immediately to review the report in light of the changes and provide additional or alternate recommendations as required to reflect the proposed construction.

We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

Appendix A - Drawings and Reports

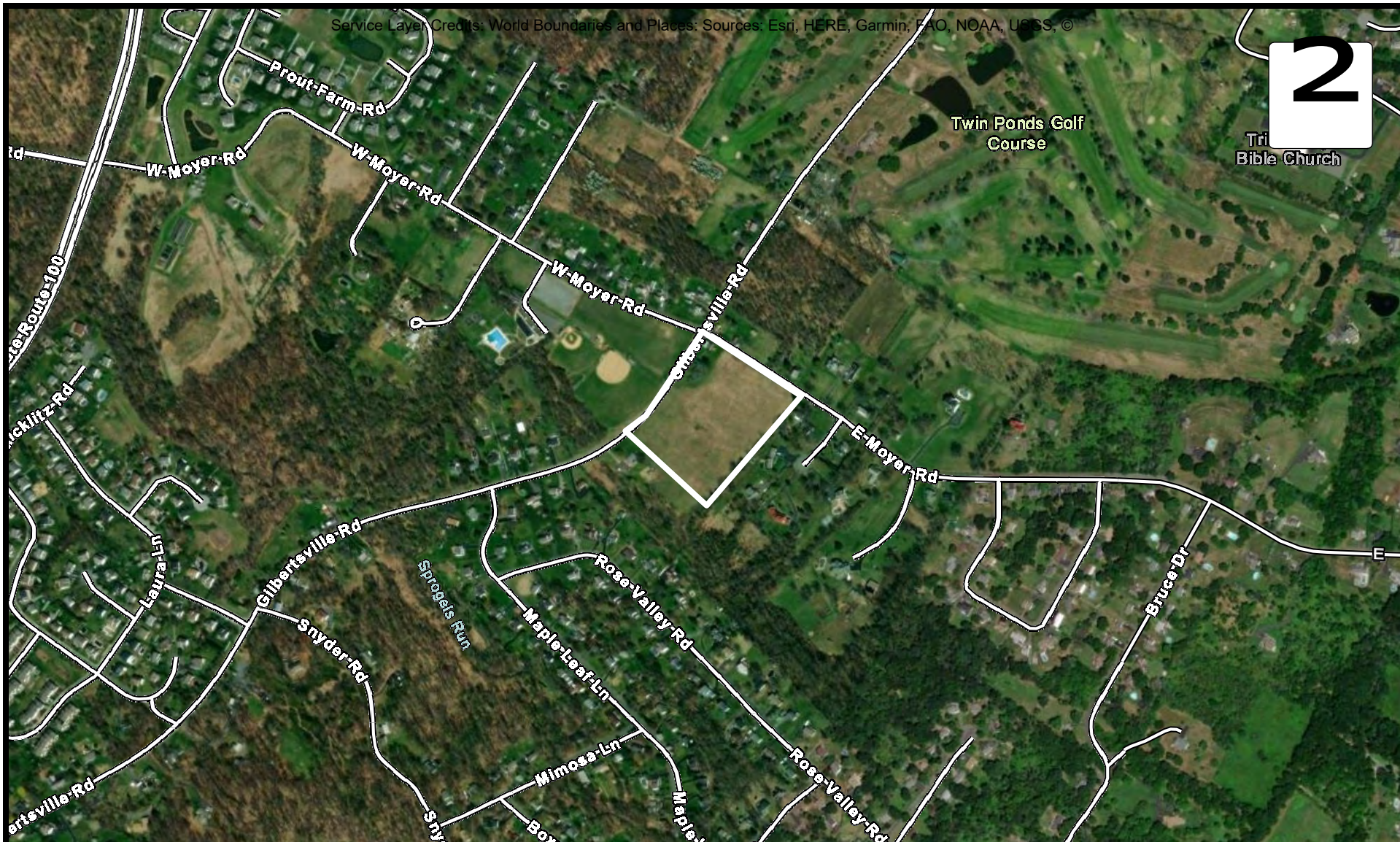
Site Location Diagram

Exploration Location Diagram(s)

Subsurface Cross-Section(s)

Geologic Survey Map

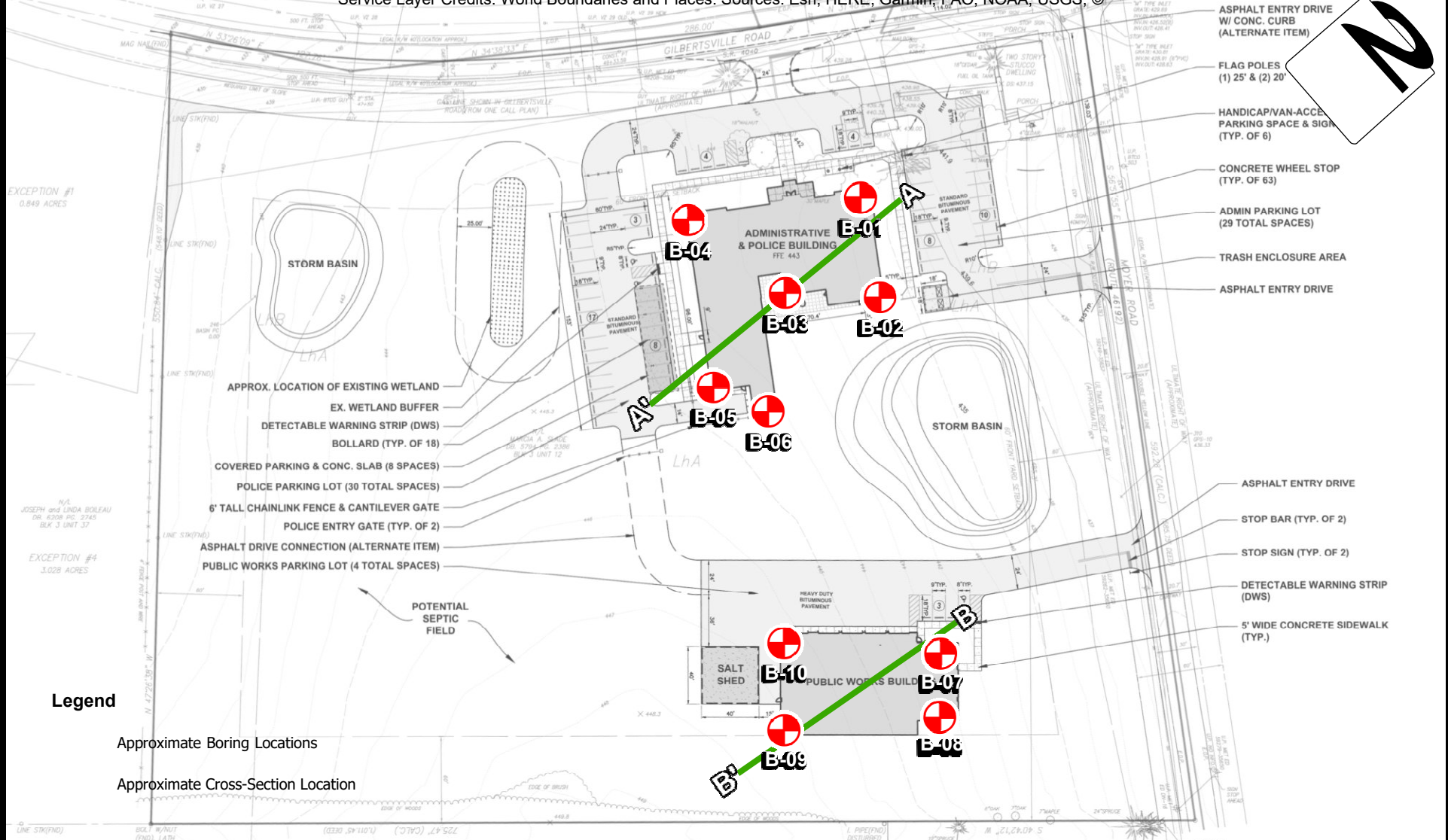
Soil Survey Map



2290 GILBERTSVILLE ROAD, POTTSTOWN, PENNSYLVANIA
CHESTER VALLEY ENGINEERS, INC.

ENGINEER DGR
SCALE 1" = 700'
PROJECT NO. 18:6488
SHEET 1 OF 1
DATE 12/23/2024

Service Layer Credits: World Boundaries and Places: Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, ©

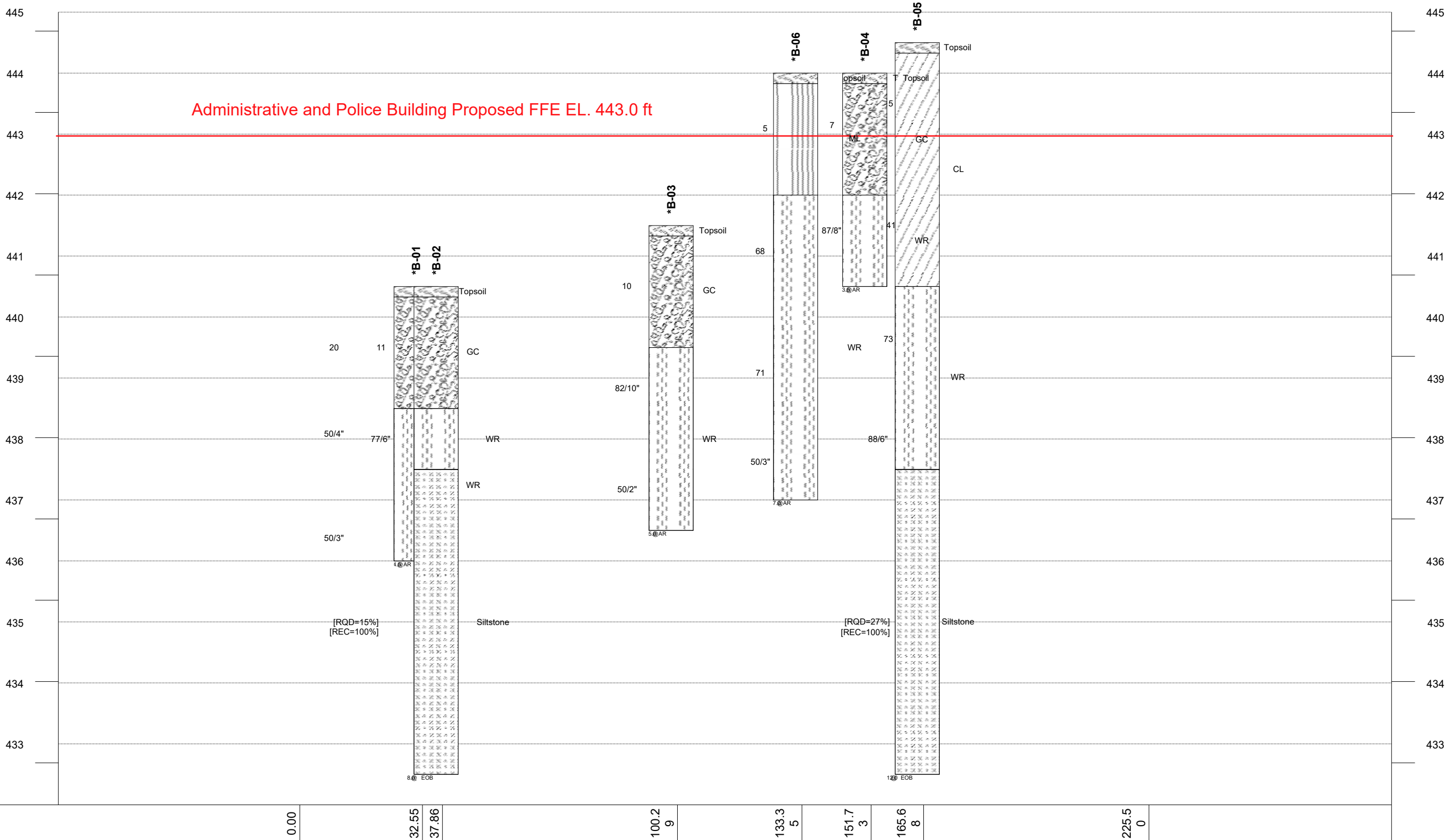


Exploration Location Diagram

Upper Pottsgrove Municipal Complex

2290 Gilbertsville Road, Pottstown, Pennsylvania
Chester Valley Engineers, Inc.

ENGINEER DGR
SCALE 1" = 100'
PROJECT NO. 18:6488
SHEET
DATE 1/10/2025



Key

Legend

Topsoil

CL

GC

ML

WR

Siltstone

Notes:

REUSE FOR: IS STRIP REUSE FOR: REFUSAL: SAMPLES
BELOW: UNDER: LOG BORING: GEOTECHNICAL INFORMATION: (BORING)
PNEUMATIC TEST: (BORING)

D1599/ASTM

Limit Plasticity Chart

X

Content

Coarsing Bottom

Calibration

Penetration

WL (Completion)

WL (Estimated High Water)

WL (Stabilized)

Fill

Possible

Probable

Rock

19464

18:6488

01/14/2025

SUBSUR

GENERALIZED

SOFACE

L PROFILE A-A'

Complex Municipal Pottsville

Inc. Chestnut, Pottsville

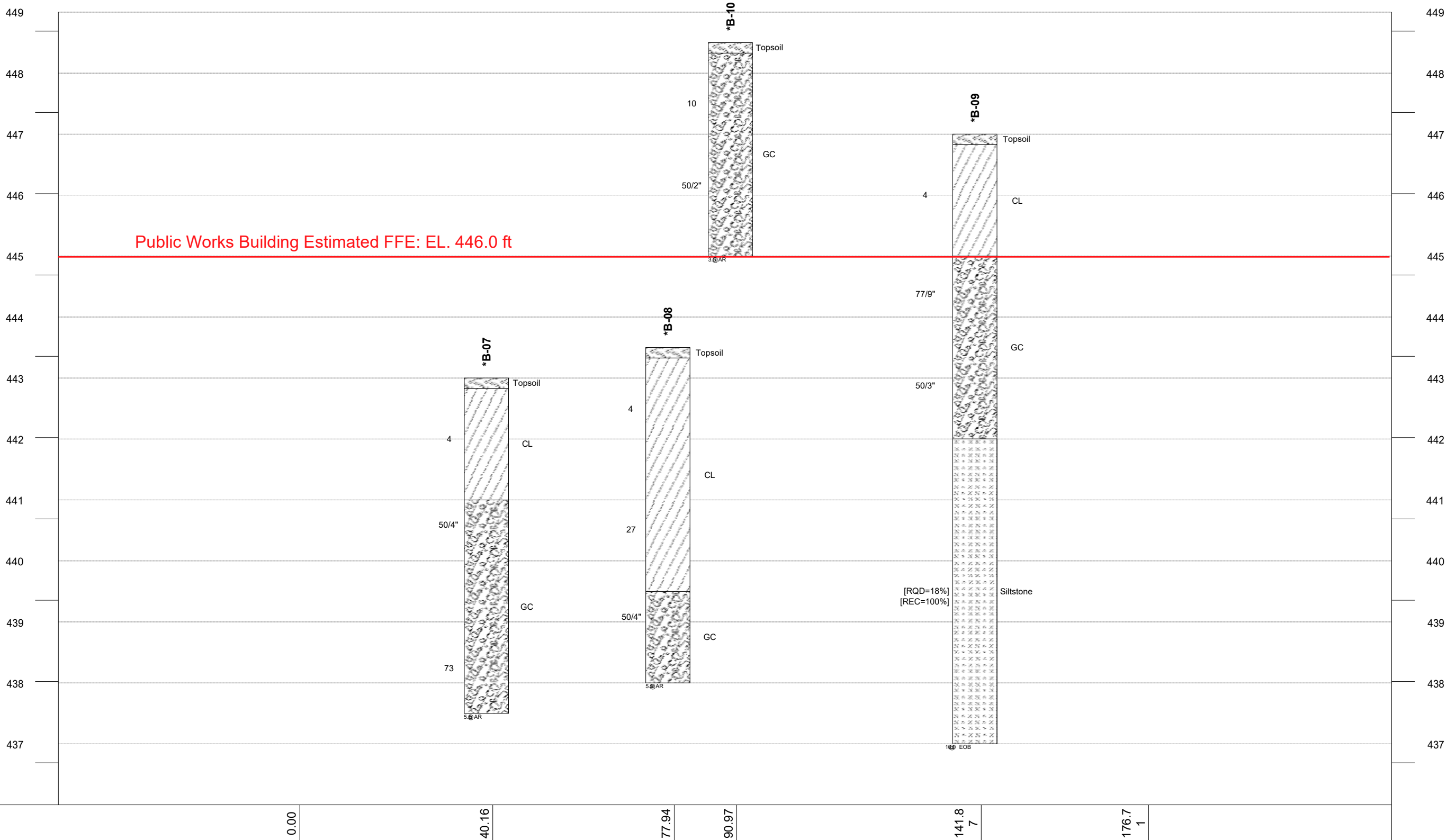
18:6488

01/14/2025

Key

Legend

Topsoil

GC

Notes:

Limit Plasticity Chart

0.00 40.16 77.94 90.97 141.87 176.71

SW (Estimated High Water)

SW (Stabilized)

Fill

Fill

Fill

Rock

19464

19464

SUBSUR GENERALIZED SOFACE L PROFILE B-B'

Complex Municipal Pottsville

Inc. Chestnut, Pottsville

Project No: 18.6488 Date: 01/10/2025

2

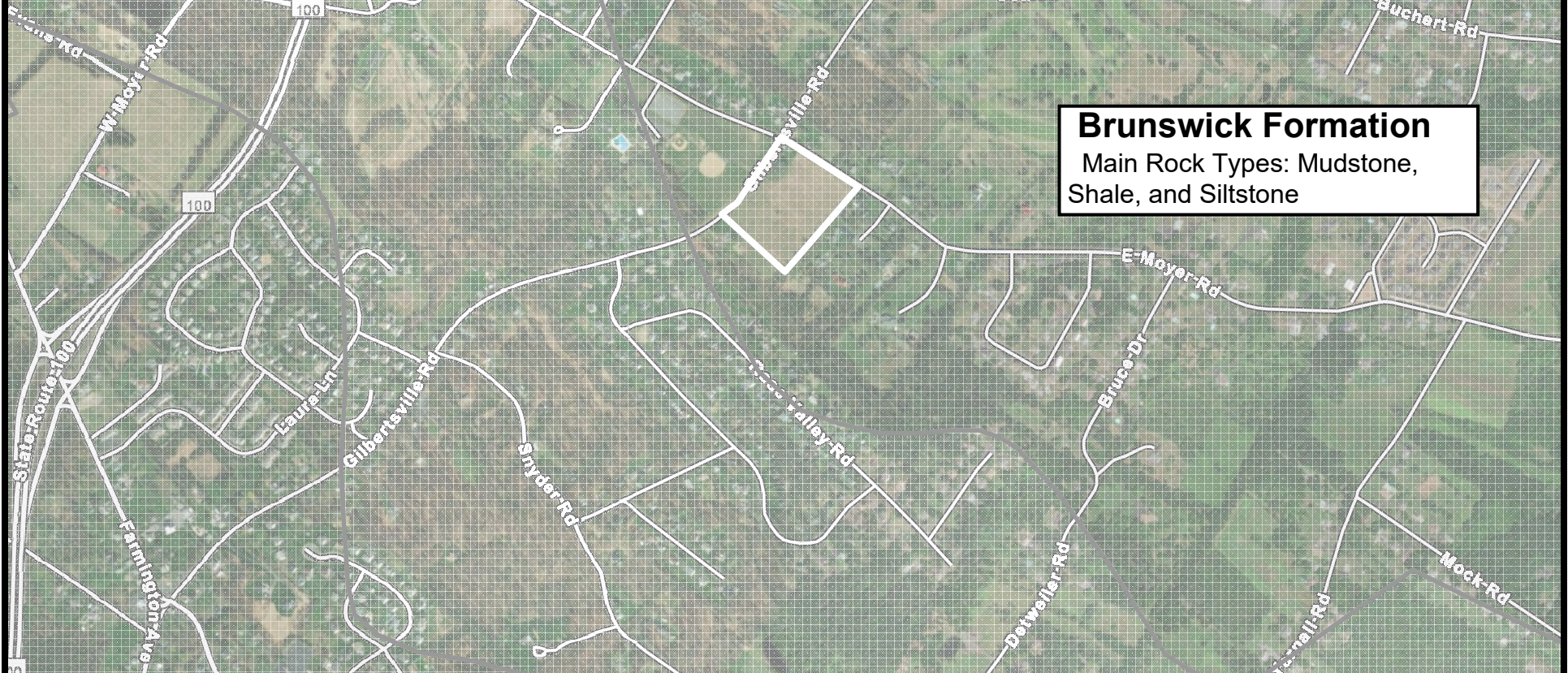
Diabase

Main Rock Type: Diabase

Twin Ponds Golf Course

Brunswick Formation

Main Rock Types: Mudstone, Shale, and Siltstone



GEOLOGIC SURVEY MAP

UPPER POTTSGROVE MUNICIPAL COMPLEX

2290 GILBERTSVILLE ROAD, POTTSTOWN, PENNSYLVANIA
CHESTER VALLEY ENGINEERS, INC.

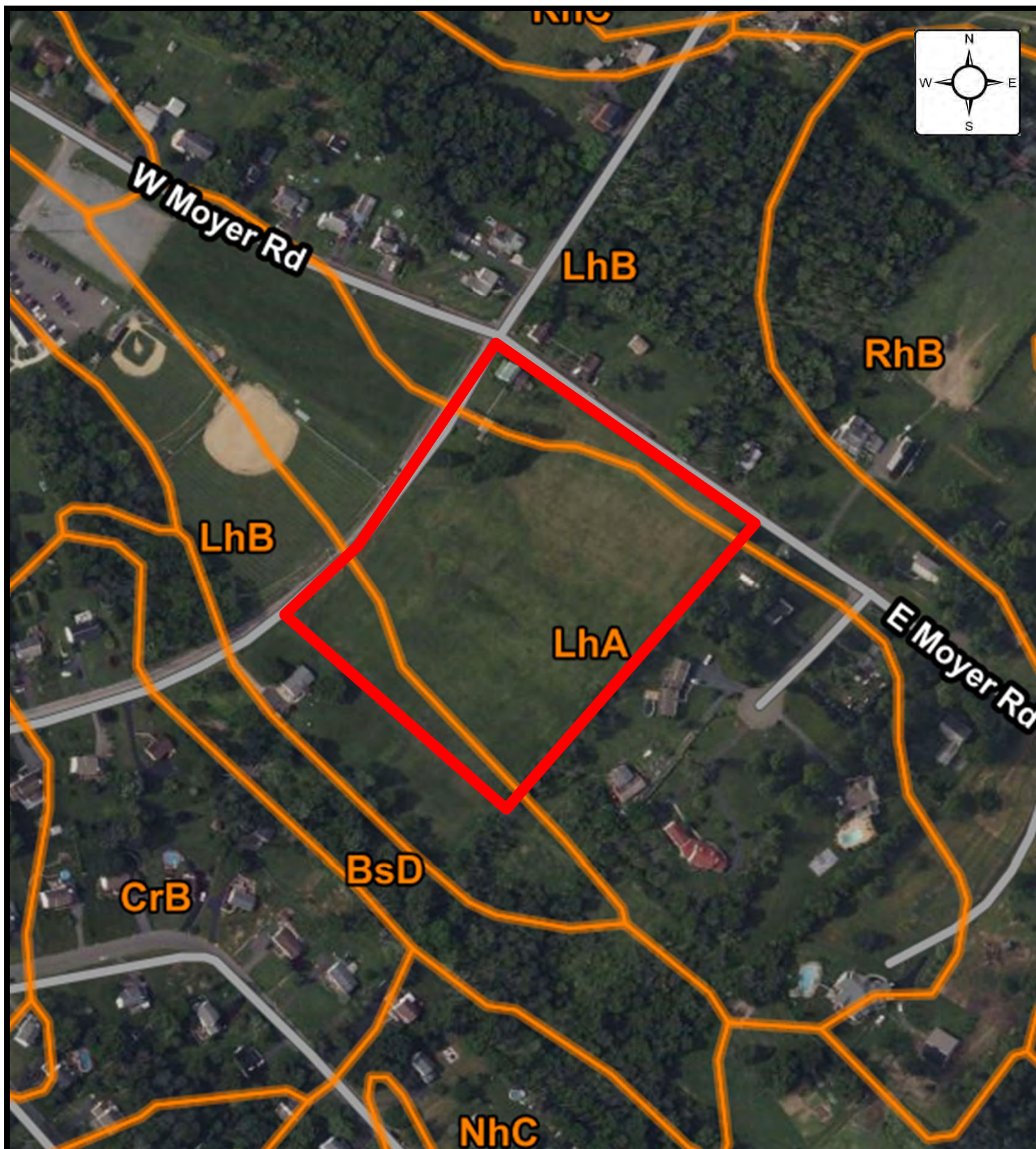
ENGINEER
DGR

SCALE
1" = 1000'

PROJECT NO.
18:6488

SHEET
1 OF 1

DATE
12/23/2024



SOIL SURVEY MAP **UPPER POTTSGROVE MUNICIPAL** **COMPLEX**

2290 GILBERTSVILLE ROAD, POTTSTOWN,
 PENNSYLVANIA
 CHESTER VALLEY ENGINEERS, INC.

DRAFTER	RB15
SCALE	NTS
PROJECT NO.	18:6488
DATE	12/23/2024
SOURCE	Web Soil Survey https://websoilsurvey.nrcs.usda.gov

Appendix B – Field Operations

Reference Notes

Exploration Procedures

Boring Logs

Photographs



REFERENCE NOTES FOR BORING LOGS

MATERIAL^{1,2}



ASPHALT



CONCRETE



GRAVEL



TOPSOIL



VOID



BRICK



AGGREGATE BASE COURSE



GW WELL-GRADED GRAVEL
gravel-sand mixtures, little or no fines



GP POORLY-GRADED GRAVEL
gravel-sand mixtures, little or no fines



GM SILTY GRAVEL
gravel-sand-silt mixtures



GC CLAYEY GRAVEL
gravel-sand-clay mixtures



SW WELL-GRADED SAND
gravelly sand, little or no fines



SP POORLY-GRADED SAND
gravelly sand, little or no fines



SM SILTY SAND
sand-silt mixtures



SC CLAYEY SAND
sand-clay mixtures



ML SILT
non-plastic to medium plasticity



MH ELASTIC SILT
high plasticity



CL LEAN CLAY
low to medium plasticity



CH FAT CLAY
high plasticity



OL ORGANIC SILT or CLAY
non-plastic to low plasticity



OH ORGANIC SILT or CLAY
high plasticity



PT PEAT
highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION	PARTICLE SIZES
Boulders	12 inches (300 mm) or larger
Cobbles	3 inches to 12 inches (75 mm to 300 mm)
Gravel: Coarse	¾ inch to 3 inches (19 mm to 75 mm)
Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand: Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, QP ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective (ex: "Silty")	25 - 45	30 - 45

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS⁶

	WL (First Encountered)
	WL (Completion)
	WL (Seasonal High Water)
	WL (Stabilized)

FILL AND ROCK



FILL



POSSIBLE FILL



PROBABLE FILL



ROCK

¹Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

²To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

³Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

⁴Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

⁵Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

⁶The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

⁷Minor deviation from ASTM D 2488-17 Note 14.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-17.



REFERENCE NOTES FOR ROCK CORES

ROCK CLASSIFICATION TYPES		
Igneous	Sedimentary	Metamorphic
Coarse Grained DIABASE DIORITE GABBRO GRANITE PEGMATITE PERIDOTITE SYENITE	Clastic (sediment) SHALE SILTSTONE SANDSTONE CONGLOMERATE LIMESTONE, OOLITIC	Foliated GNEISS PHYLLITE SCHIST SLATE
Fine Grained ANDESITE BASALT RHYOLITE TRACHYTE	Chemically Formed DOLOSTONE GYPSUM HALITE LIMESTONE	Non-Foliated AMPHIBOLITE HORNFELS MARBLE QUARTZITE
Pyroclastic OBSIDIAN PUMICE TUFF	Organic Remains CHALK COAL COQUINA	

HARDNESS	
Very Soft	Deformed by hand
Soft	Scratched with a fingernail
Moderately Hard	Scratched easily with a knife
Hard	Scratched with difficulty with a knife
Very Hard	Cannot be scratched with a knife

JOINT/FRACTURE SPACING		BEDDING	
Fractured/Jointed	Spacing	Thinly	≤ 0.3 ft.
Very Widely	> 10 feet	Medium	>0.3 ft. ≤ 1 ft.
Slightly	3 - 10 feet	Thickly	>1 ft. ≤ 3 ft.
Moderately	1 - 3 feet	Massive	>3 ft.
Highly	2 inches - 1 foot		
Intensely	< 2 inches		

JOINT OR FRACTURE CONTINUITY
It shall be noted whether the joints or fractures are continuous or discontinuous. If continuity of joints is not discernable at the scale of the rock core, continuous joints or fractures shall be assumed.

JOINT/FRACTURE ORIENTATION	
The range or average orientation of each joint set or fracture trend shall be measured in degrees from a horizontal plane where possible. If no measurement is possible, the qualitative terms High, Moderate or Low-angle shall be used. Record whether the joints are present in Conjugate sets (i.e. having an opposite sense of dip)	
High	61-90 degree
Moderate	31-60 degree
Low-angle	0-30 degree
Dip-angle	(1-90)_____degrees (if measured)

Description Sequence	Example Rock Classification Description
ROCK TYPE, [REC=_,RQD=_%], Weathering, Hardness, Bedding, Joint/Fracture Spacing, Joint/Fracture Surface Condition, Wall Rock Condition, Joint or Fracture Continuity, Joint/Fracture Orientation, Color, Additional Features	LIMESTONE, [REC=95%,RQD=60%], Highly Weathered, Hard, Thinly Bedded, Slightly Fractured/Jointed, Slightly Rough, Hard Wall Rock, Continuous, Moderate-angle Dip, Gray White

*ASTM D6032-17: RQD is performed on cores using BQ to PQ sized bits (1.433 to 3.345 inch diameter cores, respectively)

Recovery (REC(%))
$\frac{\text{Total rock recovered from run}}{\text{Total Run Length}}$

Rock Quality Designation (RQD(%))*	
$\frac{\text{Sum of core pieces } \geq 4 \text{ inches long}}{\text{Total Run Length}}$	
RQD%	Description of Rock Quality
0-25%	Very Poor
>25%-50%	Poor
>50%-75%	Fair
>75%-90%	Good
>90%	Excellent

WEATHERING	
Unweathered	No evidence of any chemical or mechanical alteration.
Slightly Weathered	Slight discoloration on surface, slight alteration along discontinuities, less than 10 percent of the rock volume altered.
Moderately Weathered	Discoloring evident, surface pitted and altered with alteration penetrating well below rock surfaces, weathering 'halos' evident. 10 to 50 percent of the rock altered.
Highly Weathered	Entire mass discolored, alteration pervading nearly all of the rock, with some pockets of slightly weathered rock noticeable, some minerals leached away.
Decomposed	Rock reduced to a soil with relict rock structure remaining (i.e. saprolite). Generally molded and crumbled by hand (friable).

JOINT/FRACTURE SURFACE CONDITION			
The following qualitative terms shall be used to describe surface condition of joints and fractures. Multiple terms can be used.			
Very rough	Slightly rough	Slickensided	Gouge

WALL ROCK CONDITION
The qualitative terms 'hard wall rock' or 'soft wall rock' shall be used to describe the condition of the parent rock on either side of the joint or fracture.



SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

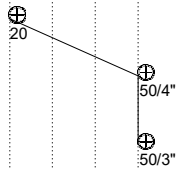
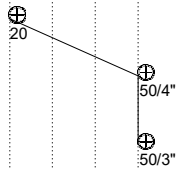
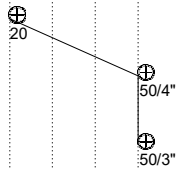
Standard Penetration Testing, or SPT, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

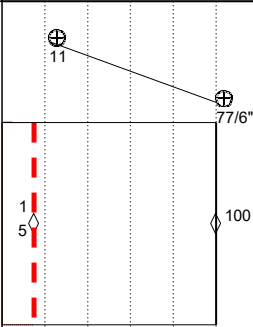
SPT Procedure:

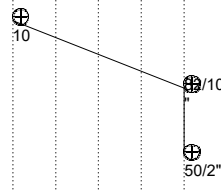
- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 18-24 inches (in 3 or 4 Increments of 6 inches each)
- Auger is advanced* and an additional SPT is performed
- One SPT typically performed for every two to five feet. An approximate 1.5 inch diameter soil sample is recovered.

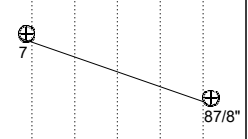
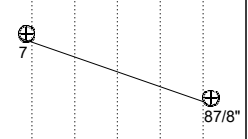
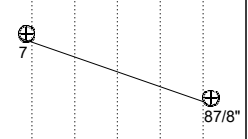


*Drilling Methods May Vary— The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

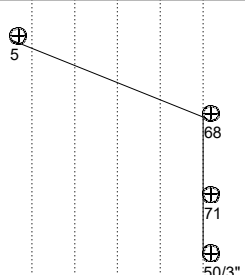
CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-01		SHEET: 1 of 1																																																																																																																																																																																													
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WL (First Encountered) N/E				BORING STARTED: Dec 23 2024				CAVE IN DEPTH: 2.00																																																																																																																																																																																													
WL (Completion) N/E				BORING COMPLETED: Dec 23 2024				HAMMER TYPE: Auto																																																																																																																																																																																													
WL (Seasonal High Water) N/E				EQUIPMENT: Diedrich D-50				LOGGED BY: ACB3																																																																																																																																																																																													
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CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-02		SHEET: 1 of 1				
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.								
SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION 				
LATITUDE: 40.292493		LONGITUDE: -75.626021		STATION:		SURFACE ELEVATION: 440.5		BOTTOM OF CASING 				
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*	STANDARD PENETRATION BLOWS/FT 10 20 30 40 50		LIQUID LIMIT X PLASTIC LIMIT	
									ROCK QUALITY DESIGNATION & RECOVERY RQD REC MC SAMPLER BLOWS/FT 10 20 30 40 50		CALIBRATED PENETROMETER TSF 1 2 3 4 5 WATER CONTENT % [FINES CONTENT] % 10 20 30 40 50	
5	S-1	SS	24	10	Topsoil Thickness[2.00"] (GC) CLAYEY GRAVEL, dark brown, moist, medium dense		436	2-3-8-17 (11) 18-27-50/0" (77/6")	11	77/6"	100	
	S-2	SS	12	1	(WR) WEATHERED SILTSTONE SAMPLED AS CLAYEY GRAVEL, dark gray, moist, very dense [Weathered SILTSTONE]							
	R-1	RC	60	60	SILTSTONE, [REC=100%,RQD=15%], Moderately Weathered, Hard, Highly Fractured/Jointed, Dark Gray and Red							
					END OF BORING AT 8.0 FT							
10							431					
15							426					
20							421					
25							416					
30							411					
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL												
WL (First Encountered)		N/E		BORING STARTED: Dec 23 2024		CAVE IN DEPTH: 2.00						
WL (Completion)		N/E		BORING COMPLETED: Dec 23 2024		HAMMER TYPE: Auto						
WL (Seasonal High Water)		N/E		EQUIPMENT: Diedrich D-50		LOGGED BY: ACB3						
WL (Stabilized)						DRILLING METHOD: Hollow Stem Auger						
GEOTECHNICAL BOREHOLE LOG												

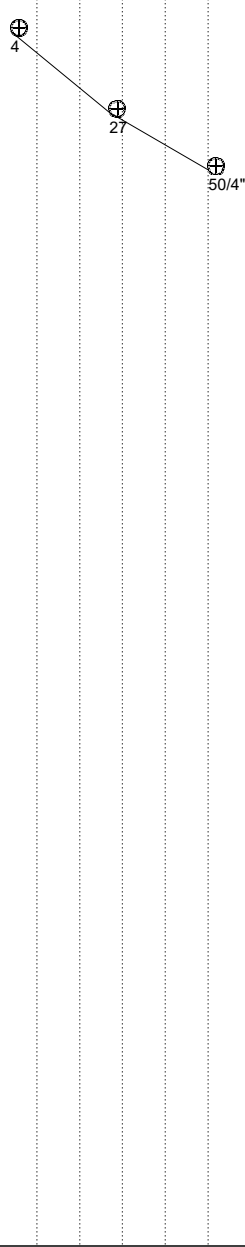
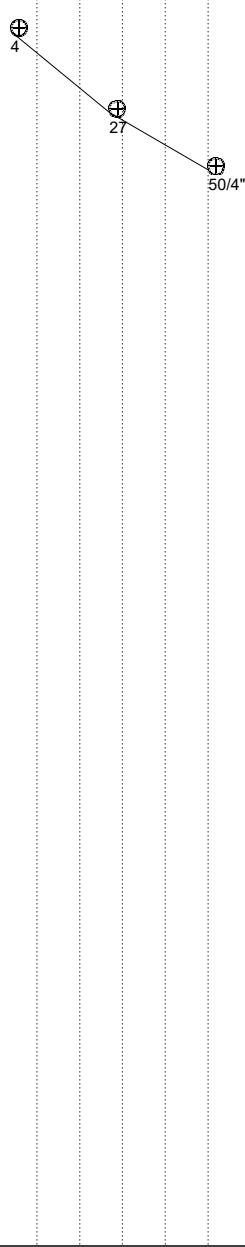
CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-03		SHEET: 1 of 1				
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.								
SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION 				
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DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value) *	STANDARD PENETRATION BLOWS/FT 10 20 30 40 50		LIQUID LIMIT X PLASTIC LIMIT	
									ROCK QUALITY DESIGNATION & RECOVERY RQD REC MC SAMPLER BLOWS/FT 10 20 30 40 50		CALIBRATED PENETROMETER TSF 1 2 3 4 5 WATER CONTENT % [FINES CONTENT] % 10 20 30 40 50	
5	S-1	SS	24	8	Topsoil Thickness [2.00"] (GC) CLAYEY GRAVEL, dark brown, moist, loose		437	2-3-7-17 (10) 17-32-50/4" (82/10") 15-50/2" (50/2")				
	S-2	SS	16	6	(WR) WEATHERED SILTSTONE SAMPLED AS CLAYEY GRAVEL, dark gray, moist, very dense [Weathered SILTSTONE]							
	S-3	SS	8	4	AUGER REFUSAL AT 5.0 FT							
10							432					
15							427					
20							422					
25							417					
30							412					
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL												
WL (First Encountered) N/E				BORING STARTED: Dec 23 2024				CAVE IN DEPTH: 2.00				
WL (Completion) N/E				BORING COMPLETED: Dec 23 2024				HAMMER TYPE: Auto				
WL (Seasonal High Water) N/E				EQUIPMENT: DIEDRICH D-50				LOGGED BY: ACB3		DRILLING METHOD: Hollow Stem Auger		
WL (Stabilized)												
GEOTECHNICAL BOREHOLE LOG												

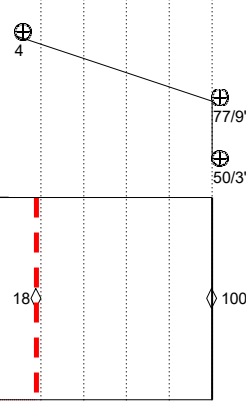
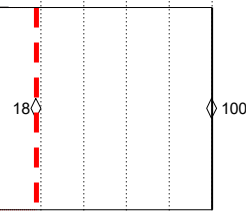
CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-04		SHEET: 1 of 1																																																																																																		
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SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION																																																																																																		
LATITUDE: 40.292322		LONGITUDE: -75.626482		STATION:		SURFACE ELEVATION: 444.0		BOTTOM OF CASING																																																																																																		
<table><tr><td rowspan="2">DEPTH (FT)</td><td rowspan="2">SAMPLE NUMBER</td><td rowspan="2">SAMPLE TYPE</td><td rowspan="2">SAMPLE DIST. (IN)</td><td rowspan="2">RECOVERY (IN)</td><td rowspan="2">DESCRIPTION OF MATERIAL</td><td rowspan="2">WATER LEVELS</td><td rowspan="2">ELEVATION (FT)</td><td rowspan="2">BLOWS/6" (TCP/MC/SPT-N value)*</td><td colspan="2">STANDARD PENETRATION BLOWS/FT</td><td colspan="2">LIQUID LIMIT X PLASTIC LIMIT</td></tr><tr><td colspan="2">ROCK QUALITY DESIGNATION & RECOVERY</td><td colspan="2">CALIBRATED PENETROMETER TSF</td></tr><tr><td colspan="9"></td><td colspan="2">10 20 30 40 50</td><td colspan="2">1 2 3 4 5</td></tr><tr><td colspan="9"></td><td colspan="2">20 40 60 80 100</td><td colspan="2">● WATER CONTENT % [FINES CONTENT] %</td></tr><tr><td colspan="9"></td><td colspan="2">RQD</td><td colspan="2">10 20 30 40 50</td></tr><tr><td colspan="9"></td><td colspan="2">REC</td><td colspan="2">10 20 30 40 50</td></tr><tr><td colspan="9"></td><td colspan="2">MC SAMPLER BLOWS/FT</td><td colspan="2">10 20 30 40 50</td></tr><tr><td colspan="9"></td><td colspan="2">TEXAS CONE PENETRATION BLOWS/FT</td><td colspan="2"></td></tr></table>												DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*	STANDARD PENETRATION BLOWS/FT		LIQUID LIMIT X PLASTIC LIMIT		ROCK QUALITY DESIGNATION & RECOVERY		CALIBRATED PENETROMETER TSF											10 20 30 40 50		1 2 3 4 5											20 40 60 80 100		● WATER CONTENT % [FINES CONTENT] %											RQD		10 20 30 40 50											REC		10 20 30 40 50											MC SAMPLER BLOWS/FT		10 20 30 40 50											TEXAS CONE PENETRATION BLOWS/FT			
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*	STANDARD PENETRATION BLOWS/FT		LIQUID LIMIT X PLASTIC LIMIT																																																																																															
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 WL (Completion)				N/E		BORING COMPLETED: Dec 23 2024		HAMMER TYPE: Auto																																																																																																		
 WL (Seasonal High Water)				N/E		EQUIPMENT: Diedrich D-50		LOGGED BY: ACB3		DRILLING METHOD: Hollow Stem Auger																																																																																																
 WL (Stabilized)																																																																																																										
GEOTECHNICAL BOREHOLE LOG																																																																																																										

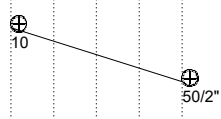
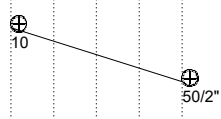
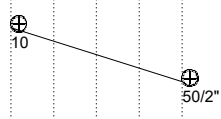
CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-05		SHEET: 1 of 1							
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.											
SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION 							
LATITUDE: 40.292144		LONGITUDE: -75.626134		STATION:		SURFACE ELEVATION: 444.5		BOTTOM OF CASING 							
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*	STANDARD PENETRATION BLOWS/FT 10 20 30 40 50		LIQUID LIMIT X PLASTIC LIMIT				
									ROCK QUALITY DESIGNATION & RECOVERY RQD REC MC SAMPLER BLOWS/FT 10 20 30 40 50		CALIBRATED PENETROMETER TSF 1 2 3 4 5 WATER CONTENT % [FINES CONTENT] % 10 20 30 40 50				
5	S-1	SS	24	10	Topsoil Thickness [2.00"] (CL) SANDY LEAN CLAY, dark brown, moist, firm to hard		440	2-2-3-7 (5)		5	22.9				
	S-2	SS	24	13	(WR) WEATHERED SILTSTONE SAMPLED AS CLAYEY GRAVEL, dark gray, moist, very dense [Weathered SILTSTONE]			11-18-23-27 (41)				41	19 15.4 30 [69.1%]		
	S-3	SS	21	12				11-41-32-50 /3" (73)						73	9.5
	S-4	SS	12	12											
10	R-1	RC	60	60		SILTSTONE, [REC=100%, RQD=27%], Moderately Weathered, Hard, Highly Fractured/Jointed, Dark Gray and Red		435	27	100					
					END OF BORING AT 12.0 FT										
15							430								
20							425								
25							420								
30							415								
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL															
WL (First Encountered)		N/E		BORING STARTED: Dec 23 2024		CAVE IN DEPTH: 2.00									
WL (Completion)		N/E		BORING COMPLETED: Dec 23 2024		HAMMER TYPE: Auto									
WL (Seasonal High Water)		N/E		EQUIPMENT: DIEDRICH D-50		LOGGED BY: ACB3									
WL (Stabilized)						DRILLING METHOD: Hollow Stem Auger									
GEOTECHNICAL BOREHOLE LOG															

CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-06		SHEET: 1 of 1							
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.											
SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION 							
LATITUDE: 40.292190		LONGITUDE: -75.625998		STATION:		SURFACE ELEVATION: 444.0		BOTTOM OF CASING 							
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*	STANDARD PENETRATION BLOWS/FT 10 20 30 40 50		LIQUID LIMIT X PLASTIC LIMIT				
									ROCK QUALITY DESIGNATION & RECOVERY RQD REC MC SAMPLER BLOWS/FT 10 20 30 40 50		CALIBRATED PENETROMETER TSF 1 2 3 4 5 WATER CONTENT % [FINES CONTENT] % 10 20 30 40 50				
5	S-1	SS	24	14	Topsoil Thickness [2.00"] (ML) SANDY SILT, dark brown, moist, loose		439	2-2-3-12 (5)		5	19.1				
	S-2	SS	22	8	(WR) WEATHERED SILTSTONE SAMPLED AS CLAYEY GRAVEL, dark gray, moist, very dense [Weathered SILTSTONE]			10-37-31-50 /4" (68)				68	13.2		
	S-3	SS	22	20				14-33-38-50 /4" (71)				71	14.2		
	S-4	SS	9	8				17-50/3" (50/3")				50/3"	6.4		
10					AUGER REFUSAL AT 7.0 FT		434								
								429							
									424						
										419					
											414				
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL															
WL (First Encountered) N/E				BORING STARTED: Dec 23 2024		CAVE IN DEPTH: 2.50									
WL (Completion) N/E				BORING COMPLETED: Dec 23 2024		HAMMER TYPE: Auto									
WL (Seasonal High Water) N/E				EQUIPMENT: Diedrich D-50		LOGGED BY: ACB3		DRILLING METHOD: Hollow Stem Auger							
WL (Stabilized)															
GEOTECHNICAL BOREHOLE LOG															

CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-07		SHEET: 1 of 1				
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.								
SITE LOCATION: 2290 Gilbertsville Road, Pottstown, Pennsylvania, 19464								LOSS OF CIRCULATION				
LATITUDE: 40.292121		LONGITUDE: -75.625267		STATION:		SURFACE ELEVATION: 443.0		BOTTOM OF CASING				
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*	STANDARD PENETRATION BLOWS/FT		LIQUID LIMIT X PLASTIC LIMIT	
									ROCK QUALITY DESIGNATION & RECOVERY		CALIBRATED PENETROMETER TSF	
									10 20 30 40 50		1 2 3 4 5	
									20 40 60 80 100		● WATER CONTENT % [FINES CONTENT] %	
									RQD		10 20 30 40 50	
									REC		10 20 30 40 50	
									MC SAMPLER BLOWS/FT		10 20 30 40 50	
									TEXAS CONE PENETRATION BLOWS/FT			
									4		1.50	
									10-50/4" (50/4")		20.1	
									14-31-42-50 /0" (73)		12.8	
									438		12.4	
									433			
									428			
									423			
									418			
									413			
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL												
WL (First Encountered) N/E				BORING STARTED: Dec 24 2024				CAVE IN DEPTH: 2.50				
WL (Completion) N/E				BORING COMPLETED: Dec 24 2024				HAMMER TYPE: Auto				
WL (Seasonal High Water) N/E				EQUIPMENT: Diedrich D-50				LOGGED BY: ACB3				
WL (Stabilized)								DRILLING METHOD: Hollow Stem Auger				
GEOTECHNICAL BOREHOLE LOG												

CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-08		SHEET: 1 of 1										
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.														
SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION 										
LATITUDE: 40.292039		LONGITUDE: -75.625152		STATION:		SURFACE ELEVATION: 443.5		BOTTOM OF CASING 										
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value) *	STANDARD PENETRATION BLOWS/FT 10 20 30 40 50		LIQUID LIMIT X PLASTIC LIMIT							
									ROCK QUALITY DESIGNATION & RECOVERY RQD REC MC SAMPLER BLOWS/FT 10 20 30 40 50		CALIBRATED PENETROMETER TSF 1 2 3 4 5 WATER CONTENT % [FINES CONTENT] % 10 20 30 40 50							
5	S-1	SS	24	6	Topsoil Thickness [2.00"] (CL) SANDY LEAN CLAY, dark brown, moist, soG to very stiff		439	2-2-2-2 (4) 7-10-17-20 (27) 9-50/4" (50/4")		1.25	32.6							
	S-2	SS	24	16	(GC) CLAYEY GRAVEL, dark brown, moist, very dense AUGER REFUSAL AT 5.5 FT							434	429	424	419	414	1.50	18.1
	S-3	SS	10	10														
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																		
WL (First Encountered)		N/E		BORING STARTED: Dec 24 2024		CAVE IN DEPTH: 3.00												
WL (Completion)		N/E		BORING COMPLETED: Dec 24 2024		HAMMER TYPE: Auto												
WL (Seasonal High Water)		N/E		EQUIPMENT: Diedrich D-50		LOGGED BY: ACB3		DRILLING METHOD: Hollow Stem Auger										
WL (Stabilized)																		
GEOTECHNICAL BOREHOLE LOG																		

CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-09		SHEET: 1 of 1				
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.								
SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION 				
LATITUDE: 40.291804		LONGITUDE: -75.625388		STATION:		SURFACE ELEVATION: 447.0		BOTTOM OF CASING 				
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value) *	STANDARD PENETRATION BLOWS/FT 10 20 30 40 50		LIQUID LIMIT X PLASTIC LIMIT	
									ROCK QUALITY DESIGNATION & RECOVERY RQD REC MC SAMPLER BLOWS/FT 10 20 30 40 50		CALIBRATED PENETROMETER TSF 1 2 3 4 5 WATER CONTENT % [FINES CONTENT] % 10 20 30 40 50	
5	S-1	SS	24	8	Topsoil Thickness [2.00"] (CL) SANDY LEAN CLAY, orangish brown, moist, soG		442	2-2-2-3 (4) 8-27-50/3" (77/9") 50/3" (50/3")	4	77/9"	50/3"	0.25 19.1 10.6 12.9 30 [38.7%]
	S-2	SS	15	13	(GC) CLAYEY GRAVEL, orangish brown, moist, very dense							
10	S-3	SS	3	3	SILTSTONE, [REC=100%,RQD=18%], Moderately Weathered, Hard, Highly Fractured/Jointed, Dark Gray and Red		437	180	100			
	R-1	RC	60	60								
					END OF BORING AT 10.0 FT		432					
							427					
							422					
							417					
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL												
WL (First Encountered)		N/E		BORING STARTED: Dec 23 2024		CAVE IN DEPTH: 2.00						
WL (Completion)		N/E		BORING COMPLETED: Dec 23 2024		HAMMER TYPE: Auto						
WL (Seasonal High Water)		N/E		EQUIPMENT: Diedrich D-50		LOGGED BY: ACB3						
WL (Stabilized)						DRILLING METHOD: Hollow Stem Auger						
GEOTECHNICAL BOREHOLE LOG												

CLIENT: Chester Valley Engineers, Inc.				PROJECT NO.: 18:6488		BORING NO.: B-10		SHEET: 1 of 1																																																																																																			
PROJECT NAME: Upper Potsgrove Municipal Complex				DRILLER/CONTRACTOR: Eichelbergers, Inc.																																																																																																							
SITE LOCATION: 2290 Gilbertsville Road, Potstown, Pennsylvania, 19464								LOSS OF CIRCULATION																																																																																																			
LATITUDE: 40.291915		LONGITUDE: -75.625547		STATION:		SURFACE ELEVATION: 448.5		BOTTOM OF CASING																																																																																																			
<table><tr><td rowspan="4">DEPTH (FT)</td><td rowspan="4">SAMPLE NUMBER</td><td rowspan="4">SAMPLE TYPE</td><td rowspan="4">SAMPLE DIST. (IN)</td><td rowspan="4">RECOVERY (IN)</td><td rowspan="4">DESCRIPTION OF MATERIAL</td><td rowspan="4">WATER LEVELS</td><td rowspan="4">ELEVATION (FT)</td><td rowspan="4">BLOWS/6" (TCP/MC/SPT-N value)*</td><td colspan="2">STANDARD PENETRATION BLOWS/FT</td><td colspan="2">LIQUID LIMIT X PLASTIC LIMIT</td></tr><tr><td colspan="2">ROCK QUALITY DESIGNATION & RECOVERY</td><td colspan="2">CALIBRATED PENETROMETER TSF</td></tr><tr><td colspan="2">MC SAMPLER BLOWS/FT</td><td colspan="2">WATER CONTENT % [FINES CONTENT] %</td></tr><tr><td colspan="2">TEXAS CONE PENETRATION BLOWS/FT</td><td colspan="2"></td></tr></table>												DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*	STANDARD PENETRATION BLOWS/FT		LIQUID LIMIT X PLASTIC LIMIT		ROCK QUALITY DESIGNATION & RECOVERY		CALIBRATED PENETROMETER TSF		MC SAMPLER BLOWS/FT		WATER CONTENT % [FINES CONTENT] %		TEXAS CONE PENETRATION BLOWS/FT																																																																										
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									TEXAS CONE PENETRATION BLOWS/FT																																																																																																		
<table><tr><td rowspan="2">5</td><td>S-1</td><td>SS</td><td>24</td><td>9</td><td rowspan="2">Topsoil Thickness [2.00"] (GC) CLAYEY GRAVEL, dark gray, moist, loose to very dense</td><td rowspan="2"></td><td rowspan="2">444</td><td rowspan="2">2-3-7-27 (10)</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td>S-2</td><td>SS</td><td>8</td><td>8</td></tr><tr><td rowspan="2">10</td><td colspan="4"></td><td rowspan="2">AUGER REFUSAL AT 3.5 FT</td><td rowspan="2"></td><td rowspan="2">439</td><td rowspan="2">24-50/2" (50/2")</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td colspan="4"></td></tr><tr><td rowspan="2">15</td><td colspan="4"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">434</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td colspan="4"></td></tr><tr><td rowspan="2">20</td><td colspan="4"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">429</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td colspan="4"></td></tr><tr><td rowspan="2">25</td><td colspan="4"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">424</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td colspan="4"></td></tr><tr><td rowspan="2">30</td><td colspan="4"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">419</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td colspan="4"></td></tr></table>												5	S-1	SS	24	9	Topsoil Thickness [2.00"] (GC) CLAYEY GRAVEL, dark gray, moist, loose to very dense		444	2-3-7-27 (10)				S-2	SS	8	8	10					AUGER REFUSAL AT 3.5 FT		439	24-50/2" (50/2")								15							434									20							429									25							424									30							419								
5	S-1	SS	24	9	Topsoil Thickness [2.00"] (GC) CLAYEY GRAVEL, dark gray, moist, loose to very dense		444	2-3-7-27 (10)																																																																																																			
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20							429																																																																																																				
25							424																																																																																																				
30							419																																																																																																				
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																																																																																																											
☒ WL (First Encountered) N/E				BORING STARTED: Dec 24 2024		CAVE IN DEPTH: 2.00																																																																																																					
☒ WL (Completion) N/E				BORING COMPLETED: Dec 24 2024		HAMMER TYPE: Auto																																																																																																					
☒ WL (Seasonal High Water) N/E				EQUIPMENT: Diedrich D-50		LOGGED BY: ACB3		DRILLING METHOD: Hollow Stem Auger																																																																																																			
☒ WL (Stabilized)																																																																																																											
GEOTECHNICAL BOREHOLE LOG																																																																																																											



RUN	DEPTH	RECOVERY	RQD
R-1	3.0' – 8.0'	100%	15%



ROCK CORE PHOTOGRAPHS
Upper Pottsgrove Municipal Complex
2290 Gilbertsville Road, Pottstown,
Pennsylvania

Project Number: 18:6488
Boring Number: B-02
Boring Completed: December 2024



RUN	DEPTH	RECOVERY	RQD
R-1	7.0' – 12.0'	100%	27%



ROCK CORE PHOTOGRAPHS
Upper Pottsgrove Municipal Complex
2290 Gilbertsville Road, Pottstown,
Pennsylvania

Project Number: 18:6488
Boring Number: B-05
Boring Completed: December 2024



RUN	DEPTH	RECOVERY	RQD
R-1	5.0' – 10.0'	100%	18%



ROCK CORE PHOTOGRAPHS
Upper Pottsgrove Municipal Complex
2290 Gilbertsville Road, Pottstown,
Pennsylvania

Project Number: 18:6488
Boring Number: B-09
Boring Completed: December 2024

Appendix C – Laboratory Testing

Laboratory Testing Summary

Grain Size Analysis/Analyses

Plasticity Chart(s)

Laboratory Testing Summary

Sample Location	Sample Number	Depth (ft)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-01	S-1	0.0-2.0	18.6										
B-01	S-2	2.0-2.8	11.6										
B-05	S-1	0.0-2.0	22.9										
B-05	S-2	2.0-4.0	15.4	CL	30	19	11	69.1					
B-05	S-3	4.0-5.8	9.5										
B-05	S-4	6.0-7.0	5.0										
B-06	S-1	0.0-2.0	19.1										
B-06	S-2	2.0-3.8	13.2										
B-06	S-3	4.0-5.8	14.2										
B-06	S-4	6.0-6.8	6.4										

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Upper Pottsgrove Municipal Complex
Client: Chester Valley Engineers, Inc.

Project No.: 18:6488
Date Reported: 1/7/2025



Office / Lab

Address

Office Number / Fax

ECS Mid-Atlantic LLC - York

52-6 Grumbacher Road
York, PA 17406

(717)767-4788

(717)767-5658

Tested by	Checked by	Approved by	Date Received
JGates		agoliheW	

Laboratory Testing Summary

Sample Location	Sample Number	Depth (ft)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-07	S-1	0.0-2.0	20.1										
B-07	S-2	2.0-2.8	12.8										
B-07	S-3	4.0-5.5	12.4										
B-08	S-1	0.0-2.0	32.6										
B-08	S-2	2.0-4.0	18.1										
B-08	S-3	4.0-4.8	15.1										
B-09	S-1	0.0-2.0	19.1										
B-09	S-2	2.0-3.3	10.6	GC	30	20	10	38.7					
B-09	S-3	4.0-4.3	12.9										

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Upper Pottsgrove Municipal Complex
Client: Chester Valley Engineers, Inc.

Project No.: 18:6488
Date Reported: 1/7/2025



Office / Lab

Address

Office Number / Fax

ECS Mid-Atlantic LLC - York

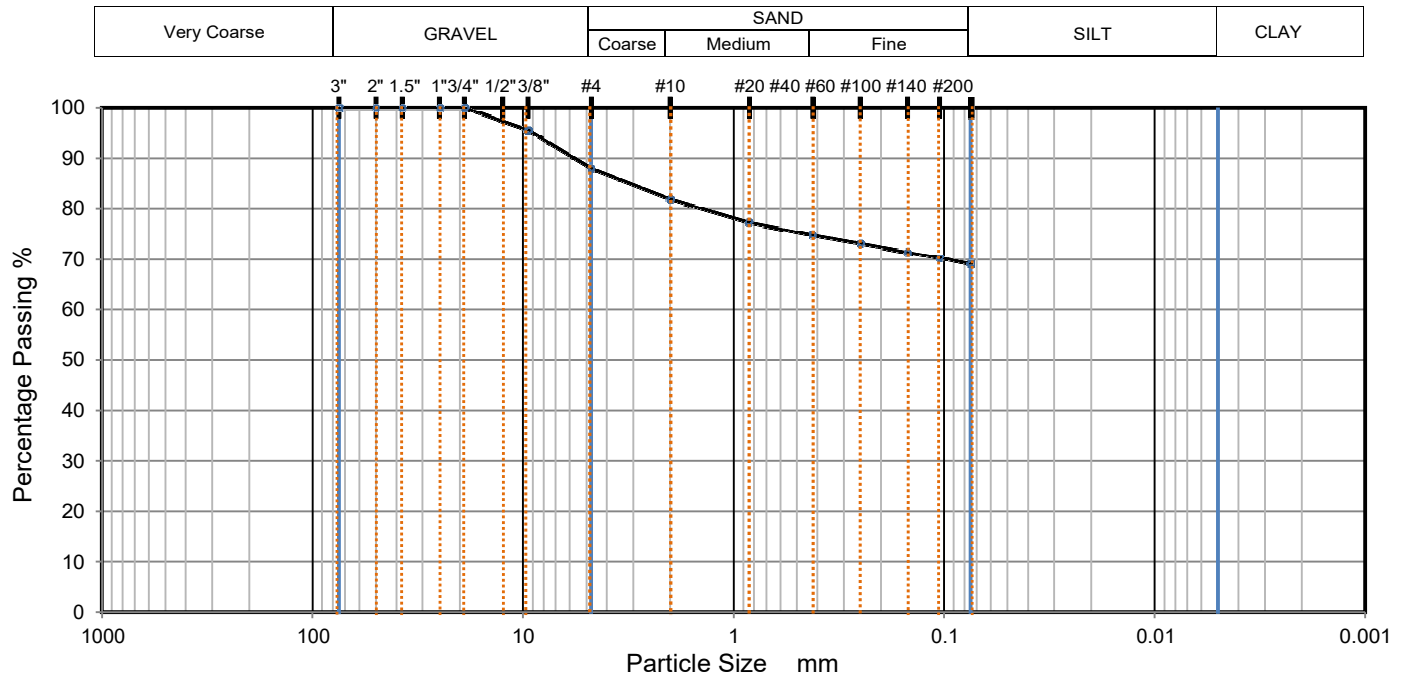
52-6 Grumbacher Road
York, PA 17406

(717)767-4788

(717)767-5658

Tested by	Checked by	Approved by	Date Received
JGates		agolihe	

PARTICLE SIZE DISTRIBUTION



TEST RESULTS (ASTM D6913M-17-METHOD B)

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	95.6		
#4	88.0		
#10	81.9		
#20	77.3		
#40	74.8		
#60	73.1		
#100	71.4		
#140	70.3		
#200	69.1		

Dry Mass of sample, g

61.4

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	12.0
Coarse Sand, #4 to #10 sieve	6.1
Medium Sand, #10 to #40	7.1
Fine Sand, #40 to #200	5.7
Fines <#200	69.1

USCS	CL	Liquid Limit	30	D90	5.700	D50		D10	
AASHTO	A-6	Plastic Limit	19	D85	3.104	D30		Cu	
USCS Group Name	Sandy lean clay	Plasticity Index	11	D60		D15		Cc	

Project: Upper Pottsgrove Municipal Complex

Client: Chester Valley Engineers, Inc.

Sample Description: Sandy Lean Clay

Sample Source: B-05

Project No.: 18:6488

Depth (ft): 2.0 - 4.0

Sample No.: S-2

Date Reported: 1/7/2025



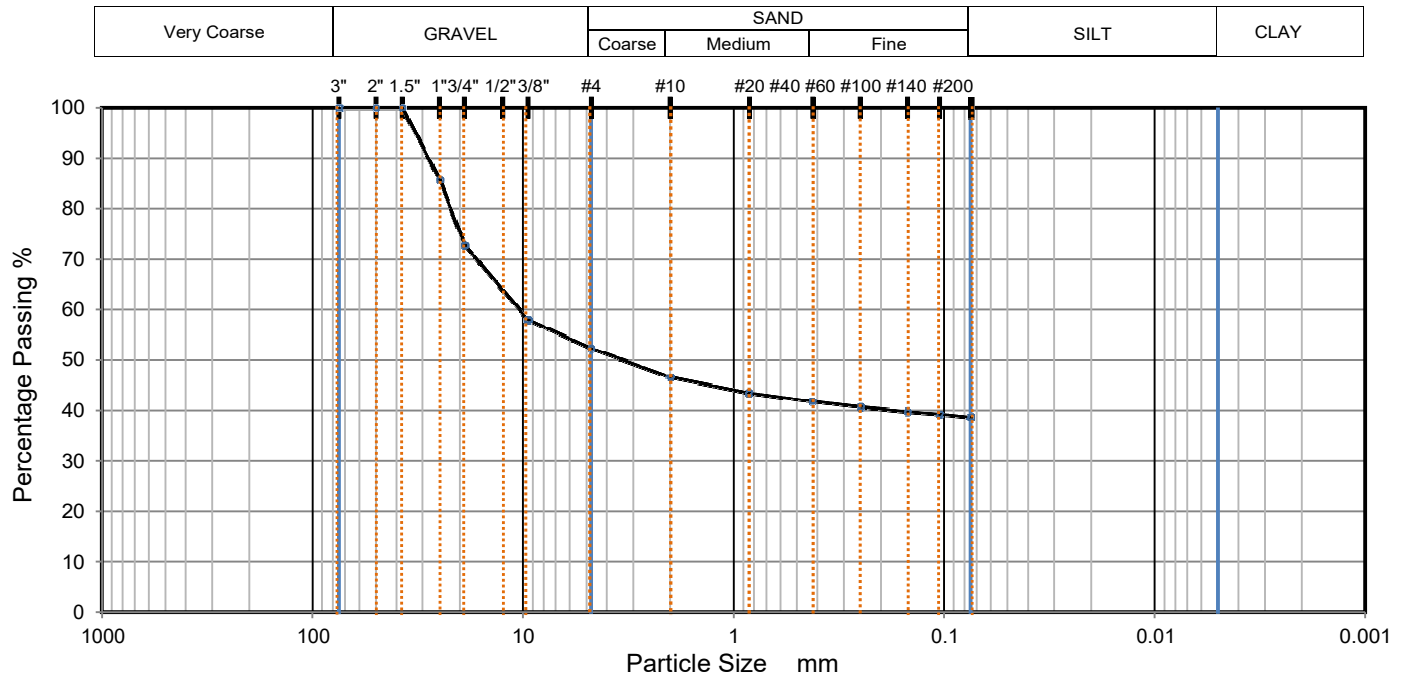
Office / Lab
ECS Mid-Atlantic LLC - York

Address
52-6 Grumbacher Road
York, PA 17406

Office Number / Fax
(717)767-4788
(717)767-5658

Tested by	Checked by	Approved by	Date Received	Remarks
JGates		agoliw		

PARTICLE SIZE DISTRIBUTION



TEST RESULTS (ASTM D6913M-17-METHOD B)

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	85.8		
3/4"	72.8		
3/8"	58.0		
#4	52.3		
#10	46.6		
#20	43.5		
#40	41.8		
#60	40.7		
#100	39.8		
#140	39.3		
#200	38.7		

Dry Mass of sample, g

130.1

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	47.7
Coarse Sand, #4 to #10 sieve	5.7
Medium Sand, #10 to #40	4.8
Fine Sand, #40 to #200	3.1
Fines <#200	38.7

USCS	GC	Liquid Limit	30	D90	28.190	D50	3.351	D10	
AASHTO	A-4	Plastic Limit	20	D85	24.580	D30		Cu	
USCS Group Name	Clayey gravel	Plasticity Index	10	D60	10.430	D15		Cc	

Project: Upper Pottsgrove Municipal Complex
 Client: Chester Valley Engineers, Inc.
 Sample Description: Clayey Gravel
 Sample Source: B-09

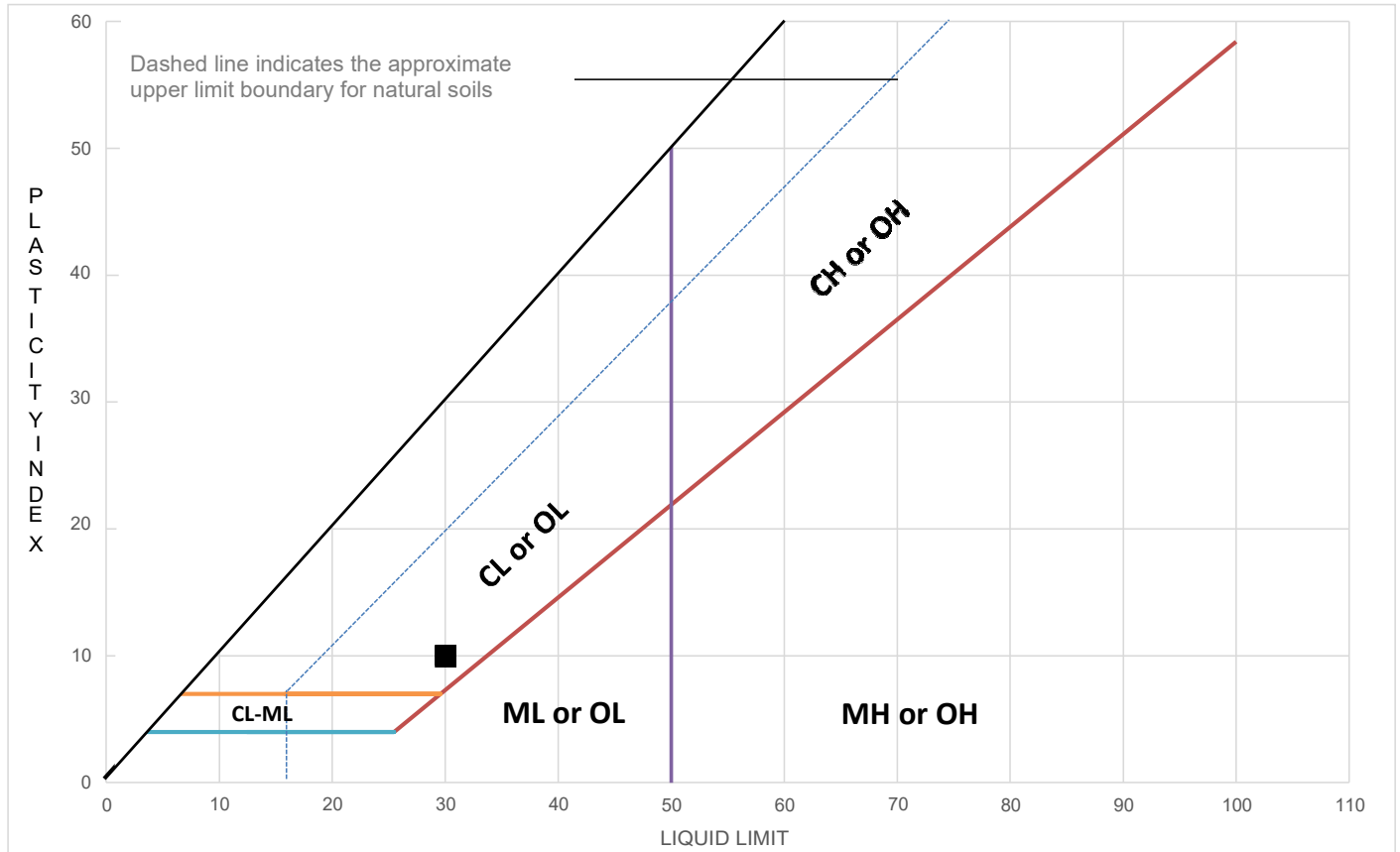
Project No.: 18:6488
 Depth (ft): 2.0 - 3.3
 Sample No.: S-2
 Date Reported: 1/7/2025



Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - York	52-6 Grumbacher Road York, PA 17406	(717)767-4788 (717)767-5658

Tested by	Checked by	Approved by	Date Received	Remarks
JGates		agoliwew		

LIQUID AND PLASTIC LIMITS TEST REPORT



TEST RESULTS (ASTM D4318-10 (MULTIPOINT TEST))

	Sample Location	Sample Number	Sample Depth (ft)	LL	PL	PI	%<#40	%<#200	AASHTO	USCS	Material Description
■	B-09	S-2	2.00-3.25	30	20	10	41.8	38.7	A-4	GC	Clayey Gravel

Project: Upper Pottsgrove Municipal Complex
Client: Chester Valley Engineers, Inc.

Project No.: 18:6488
Date Reported: 1/7/2025



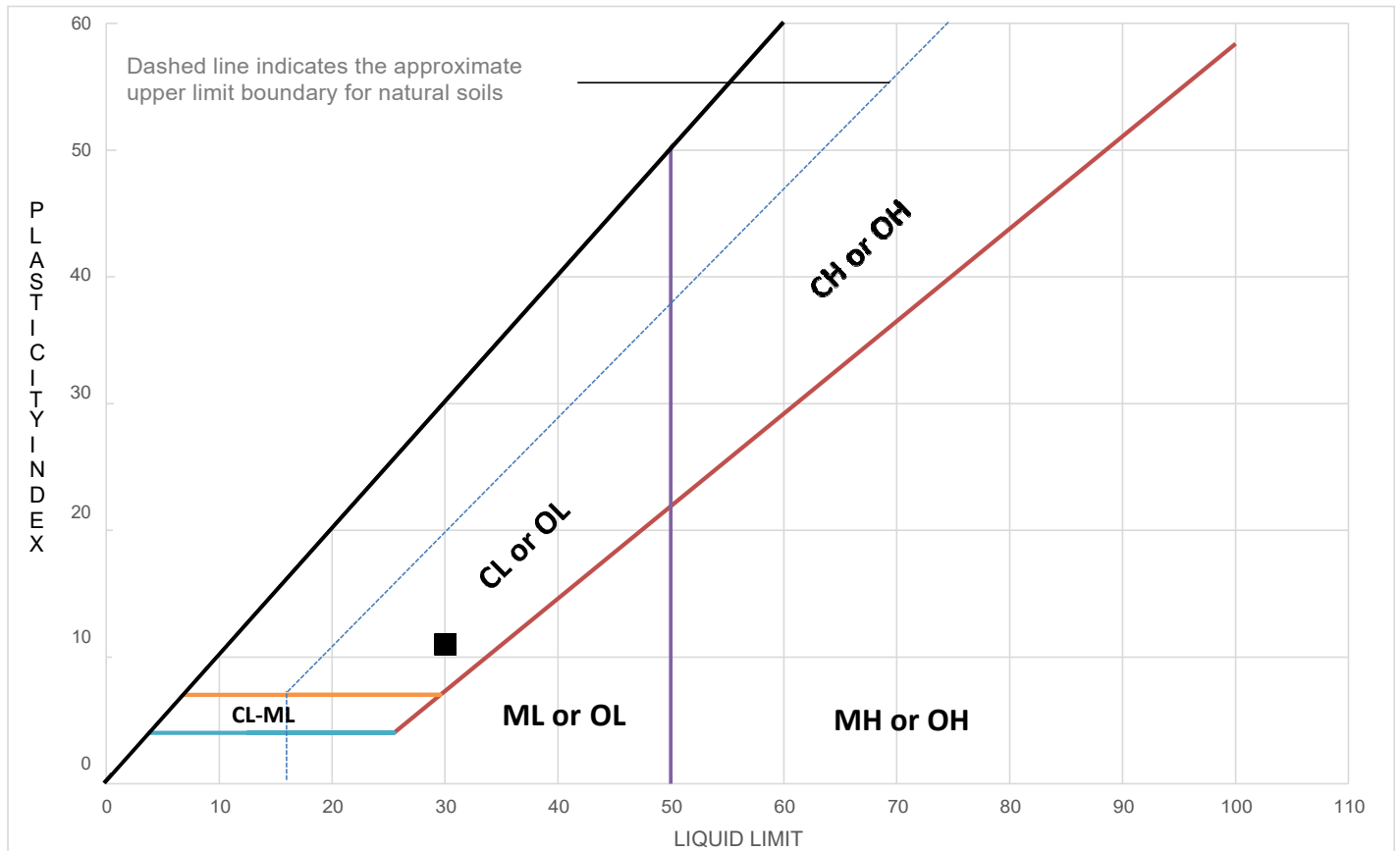
Office / Lab
ECS Mid-Atlantic LLC - York

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York, PA 17406

Office Number / Fax
(717)767-4788
(717)767-5658

Tested by	Checked by	Approved by	Date Received
JGates		agolihe	

LIQUID AND PLASTIC LIMITS TEST REPORT



TEST RESULTS ()

	Sample Location	Sample Number	Sample Depth (ft)	LL	PL	PI	%<#40	%<#200	AASHTO	USCS	Material Description
■	B-05	S-2	2.00-4.00	30	19	11	74.8	69.1	A-6	CL	Sandy Lean Clay

Project: Upper Pottsgrove Municipal Complex
Client: Chester Valley Engineers, Inc.

Project No.: 18:6488
Date Reported: 1/7/2025



Office / Lab
ECS Mid-Atlantic LLC - York

Address
52-6 Grumbacher Road
York, PA 17406

Office Number / Fax
(717)767-4788
(717)767-5658

Tested by JGates	Checked by	Approved by agolihew	Date Received

BID FOR
UPPER POTTSGROVE TOWNSHIP NEW MUNICIPAL COMPLEX
GENERAL CONTRACTOR

Submitted To:

Submitted By:

UPPER POTTSGROVE TOWNSHIP

1409 FARMINGTON AVENUE

POTTSTOWN, PA 19464

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER.

ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

OWNER TO AWARD PROJECT AS ONE SINGLE CONTRACT.

- The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
- BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation, those dealing with disposition of Bid Security. This Bid will remain open for NINETY (90) days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award.
- In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - BIDDER has examined copies of all Contract Documents, Advertisement to Bid, and the Instructions to Bidders. Additionally, the Bidder hereby acknowledges receipt of the following addenda by their initials:

Addendum (No. & Initial): *** ENTER ON PENNBID ***

- BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit the project site shall be no reason for future request for additional compensation or costs of any kind.
- This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, form, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or OWNER.

- The BIDDER agrees to perform the various items of Work for the following Lump Sum Prices:

Base Bid Proposal:

Base Bid Price for all work indicated on the Contract Documents. Base Bid Price must **INCLUDE ALL** Allowances for all work indicated on the Contract Documents. Base Bid Price **EXCLUDES** Unit Prices itemized later in this Bid Form.

BASE BID: NEW ADMINISTRATION & POLICE DEPARTMENT BUILDING:

* * *

(Words)

Dollars.

(\$ * * *)

(Figures)

TOTAL BID AMOUNT:

* * *

(Words)

Dollars.

(\$ * * *)

(Figures)

- ALTERNATES:** The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the low bidder. The Bidder agrees that the contract time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such Alternate descriptions. The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the base bid or other alternate. Alternates Prices shall include the cost of furnishing, installing all materials, labor, tools, equipment and other incidentals necessary to complete the work in accordance with the design intent, manufacturers' recommendations, building codes and the project specifications. Do not adjust material allowance under any alternate bid items. Indicate whether alternate price is an add or deduct when a choice is provided. **For additional information regarding specific alternates, reference Section 01.2300 Alternates. ***ENTER ALTERNATES ON PENNBID.*****

ALTERNATE No. 1: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include the 'NEW PUBLIC WORKS BUILDING' and all associated site/civil elements as indicated on the civil drawings.

Base Bid Condition:

- Construct new Administration Building and new Police Building.
- Construct all related sitework and utilities for the new Administration Building and the new Police Building. This includes but is not limited to: earthwork, grading, topsoiling, building pad grading, final stone, paving, striping, wheel stops, conduit for cable/data, and propane.
- Construct fencing, gates, and related operators and equipment for new Police Building.

4. Utilities run & connected to Admin. Building and Police Building Generator (Generator provided by Others).
5. Site Contractor responsible for temporarily stockpiling approximately 3,600 cubic yards of material and the appropriate E&S measures as shown on the CVE design plans. In late fall or winter, Site Contractor is responsible for loading, hauling, and dumping all material to 370 Evans Road, Pottstown, PA.
6. Construct the base site work for the new Public Works Building. This includes running and stubbing up of all utilities except for propane to within five (5) feet outside the proposed Public Works Building. Includes earthwork, grading, utilities, conduit for cable/data. Intent: to provide a pad-ready site for the future Public Works Building.
7. No new Public Works Building.
8. No new Public Works Generator and generator-related site utility runs, connections, fencing/gates & pads.

Alternate 1 Condition: Base Bid Condition, PLUS:

1. Construct New Public Works Building in its entirety, including but not limited to all associated site/civil elements, utilities, underground storage tanks, tap-ins, and tie-ins as indicated on the civil drawings.
2. Install Public Works Generator, run and connect all required utilities, including but not limited to the Public Works propane tank, electrical connections, and water supply (Generator provided by Others). Install generator-related site utility runs, connections, fencing/gates & pads.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 2: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**SALLY PORT ADDITION**' and all associated components in its entirety.

Base Bid Condition:

1. No Sally Port Addition and/or all associated components.

Alternate 2 Condition:

1. In lieu of Base Bid Condition, construct the '**SALLY PORT ADDITION**' and all associated components in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 3: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**PRE-MANUFACTURED CAR PORT**' and all associated components in its entirety.

Base Bid Condition:

1. Construct new concrete slab and all associated components in its entirety. This includes the Base Bid concrete slab construction.

Alternate 3 Condition:

1. In lieu of Base Bid Condition, construct the 'PRE-MANUFACTURED CAR PORT' and all associated components in its entirety.

Affected Contracts: GC, PC, EC, MC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 4: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT'.

Base Bid Condition:

1. Provide and install 'EPOXY PAINT' in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING.'

Alternate 4 Condition:

1. In lieu of 'EPOXY PAINT,' provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 5: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

ALTERNATE No. 5 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

Alternate 5 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114', provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 6: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to provide and install '**LINEAR WOOD CEILING (WD-01)**' in rooms; 009, 013, 114, 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system.

Base Bid Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in rooms 009, 013, 114, and 115, provide and install a finished 5/8" gypsum ceiling system.

Alternate 6 Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in lieu of a finished 5/8" gypsum ceiling system in rooms 009, 013, 114, and 115, provide and install a 'LINEAR WOOD CEILING (WD-01)'.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 7: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to provide and install '**METAL PANEL CEILING SYSTEMS (MTL-01)**' in rooms; Garage 112, Open Storage 114, and Mezzanine 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system. **ALTERNATE No. 7 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.**

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install a finished 5/8" gypsum ceiling system in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Alternate 7 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of a finished 5/8" gypsum ceiling system, provide and install 'METAL PANEL CEILING SYSTEMS (MTL-01)' in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 8: The Bidder shall state the adjustment in price from the base bid to add the 'ENTRY DRIVE' and all associated components from the Police Department parking to Moyer Road.

Base Bid Condition:

1. No new access drive from Police Department parking to Moyer Road.

Alternate 8 Condition:

1. Provide and install new access drive from Police Department parking to Moyer Road. This includes but is not limited to: earthwork, grading, topsoiling, final stone, paving, and striping. Includes related HOP work.
2. Alternate No.8 pertains to the access drive construction only. The balance of sitework is in the Base Bid. including but not limited to: earthwork, grading, stone, building pad grading, topsoiling, final stone, paving, striping, curb stops, curbing, and propane.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 9: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'WASH BAY 113', and all associated components (finishes, MEP, etc.).

ALTERNATE No. 9 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No. 1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'WASH BAY 113' and all associated components. Do not construct 'MEZZANINE 115'. Note that underground storage tanks are included in **Alternate No. 1**.

Alternate 9 Condition:

1. Construct 'WASH BAY 113' and all associated components and, including but not limited to finishes, MEP, etc.
2. 'MEZZANINE RM 115' construction is contingent upon acceptance of Alternate No. 10.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 10: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include '**MEZZANINE RM 115**' and all associated components.

ALTERNATE No. 10 IS CONTINGENT UPON ACCEPTANCE OF BOTH ALTERNATES No.1 AND No. 9.

Base Bid 10 Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'MEZZANINE ROOM 115' and all associated components.

Alternate 10 Condition:

1. Construct 'MEZZANINE ROOM 115' and all associated components.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 11: The Bidder shall state the adjustment in price from the base bid to add '**RAMP TO EXISTING HOUSE,**' and all associated components.

Base Bid Condition:

1. No new ramp, handrails, guards, and all related components required to provide access to the existing house. Install site grading as required to address slope change between existing house and parking.

Alternate 11 Condition:

1. Provide and install ramp, handrails, guards, and all related components required to provide access to the existing house.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 12: The Bidder shall state the adjustment in price from the base bid to add '**PAVED PATH AND BOLLARD LIGHTING BETWEEN ADMINISTRATION AND PUBLIC WORKS BUILDINGS,**' and all associated components.

Base Bid Condition: 1. N/A.

Alternate 12 Condition:

2. Provide and install paved path and bollard lighting between Administration building and Public Works building and all related components required to provide access.

Affected Contracts: GC, EC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

- **UNIT PRICES:** OWNER shall make adjustments to the Contract based on the actual field conditions encountered using the Unit Prices included with the proposal. The BIDDER agrees that OWNER reserves the right to reject or otherwise not agree to use the Unit Prices submitted, if in the Owners opinion, the nature or quantity of the Work encountered is such that the unit price cost no longer applies to the Work. The Owner also reserves the right to solicit independent proposals as required by Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid, and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from OWNER. Unit Prices shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidental costs necessary to complete the specified operation. Unit prices will be used to ADD/DEDUCT the contract cost where appropriate. The Bidder agrees that in the event of any inconsistency between a Unit Price and the extension of a Unit Price in a Material Allowance, the Unit Price shall control, the Material Allowance extension shall be recalculated.

*****ENTER UNIT PRICES ON PENNBID.*****

UNIT PRICE 1 – TRENCH ROCK: BIDDER agrees to excavate and dispose of trench rock encountered and replace with compacted 2A modified natural stone. All rock must be identified and measured in the field by the Construction Manager prior to and during removal. Rock shall be removed by mechanical methods only; no blasting will be permitted:

The contract Unit Price for rock excavation by ram hammer is:

\$ * per cubic yard**

UNIT PRICE 2 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH STONE: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with compacted select engineered fill. All removal must be identified and measured in situ by the Owner's representative.

The contract Unit Price for up to 400 cubic yards in one defined contiguous area is:

\$ * per cubic yard**

UNIT PRICE 3 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH CONCRETE: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed 2000-psi concrete mix.. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard is:

\$ * per cubic yard**

UNIT PRICE 4 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH SUITABLE SOIL: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed suitable soils. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard for quantities less than 100 cubic yards in one defined contiguous area is:

\$ * per cubic yard**

UNIT PRICE 5 – CONTAMINATED MATERIALS REMOVAL AND DISPOSAL: There is the potential that soil may be contaminated with various products during excavations around the site such as diesel fuel, gasoline, motor oil, lubricating oil and anti-freeze. BIDDER agrees to excavate, remove and legally dispose of contaminated soils encountered and replace with compacted 2A modified natural stone. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price per ton is:

\$ *** per ton

UNIT PRICE 6 – HAZARDOUS WASTE TESTING, REMOVAL, AND DISPOSAL: BIDDER agrees to excavate, remove and legally dispose of Hazardous Waste encountered and replace with select engineered fill. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price for removal of soils tested and identified as Hazardous Waste and replacement with select engineered fill in quantities of less than 10 tons in one contiguous area is:

\$*** per ton

UNIT PRICE 7 –LABORER (Class 03): BIDDER agrees to provide a laborer (Class 03) at the following unit price:

The contract Unit Price per hour is:

\$*** per hour

UNIT PRICE 8 –SIDEWALK AND SUBBASE: BIDDER agrees to construct concrete sidewalk and related subbase as per Project Specifications, at the following unit price:

The contract Unit Price per square foot is:

\$*** per square foot (SF)

- OWNER CONTINGENCY ALLOWANCE:

The Construction Manager must review with the Owner and approve all allowance work prior to the Contractor performing the Work. Should the allowance amount be exceeded, the Contractor will be paid by Change Order addition for the related Work. Similarly, should the allowance used be less than the allowance amount, the Contractor will credit the Owner for the unused quantity by a Change Order credit.

BIDDER agrees to include in the Base Bid Price, in addition to the Work shown on the Drawings and Specifications the following:

Owner Contingency Allowance, General Construction Contract:
\$100,000.00 (One Hundred Thousand Dollars and 00/100 Cents).

- Bidder accepts the provisions of the Agreement as to the liquidated damages in the event of failure to complete the Work by the dates and milestones defined in the Contract Documents.
- In submitting this Bid, it is understood that the OWNER reserves the unrestricted right to reject any and all bids, or to waive any informalities or technicalities in said Bids.
- Bidder understands that Owner reserves the right to consider Alternates Prices in determining the low bidder. All Alternate Prices shall include costs for furnishing and installing all materials, labor, tools equipment, and other incidentals necessary to complete the specified operation in accordance with the Project Specifications and the manufacturer's recommendations.

Accompanying this Bid is Security in the form of *** in the amount of ten percent (10%) of the total of the Base Bid and all possible add alternates.

SUBMIT INFORMATION ON PENNBID

In witness whereof, the undersigned has caused this Proposal to be executed this _ _ day of _ _ 20__.

INDIVIDUAL, PARTNERSHIP OR CORPORATION

(Firm Name)

By _____
(Signature)

Print of Type Name of Person Authorized to Sign Title

State of Incorporation _____

Business Address _____

Telephone Number _____

Email Address _____

Attest by

Print or Type Name of Person

Corporate Seal

BID FOR
UPPER POTTS GROVE TOWNSHIP NEW MUNICIPAL COMPLEX
MECHANICAL (HVAC/MC) CONTRACTOR

Submitted To:

Submitted By:

UPPER POTTS GROVE TOWNSHIP

1409 FARMINGTON AVENUE

POTTSTOWN, PA 19464

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER.

ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

OWNER TO AWARD PROJECT AS ONE SINGLE CONTRACT.

- The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
- BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation, those dealing with disposition of Bid Security. This Bid will remain open for NINETY (90) days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award.
- In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - BIDDER has examined copies of all Contract Documents, Advertisement to Bid, and the Instructions to Bidders. Additionally, the Bidder hereby acknowledges receipt of the following addenda by their initials:

Addendum (No. & Initial): *** ENTER ON PENNBID ***

- BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit the project site shall be no reason for future request for additional compensation or costs of any kind.
- This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, form, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or OWNER.

- The BIDDER agrees to perform the various items of Work for the following Lump Sum Prices:

Base Bid Proposal:

Base Bid Price for all work indicated on the Contract Documents. Base Bid Price must **INCLUDE ALL** Allowances for all work indicated on the Contract Documents. Base Bid Price **EXCLUDES** Unit Prices itemized later in this Bid Form.

BASE BID: NEW ADMINISTRATION & POLICE DEPARTMENT BUILDING:

* * *

_____ Dollars.

(Words)

(\$ _____)

* * *

(Figures)

TOTAL BID AMOUNT:

* * *

_____ Dollars.

(Words)

(\$ _____)

* * *

(Figures)

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the low bidder. The Bidder agrees that the contract time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such Alternate descriptions. The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the base bid or other alternate. Alternates Prices shall include the cost of furnishing, installing all materials, labor, tools, equipment and other incidentals necessary to complete the work in accordance with the design intent, manufacturers' recommendations, building codes and the project specifications. Do not adjust material allowance under any alternate bid items. Indicate whether alternate price is an add or deduct when a choice is provided. **For additional information regarding specific alternates, reference Section 01.2300 Alternates. ***ENTER ALTERNATES ON PENNBID.*****

ALTERNATE No. 1: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include the 'NEW PUBLIC WORKS BUILDING' and all associated site/civil elements as indicated on the civil drawings.

Base Bid Condition:

1. Construct new Administration Building and new Police Building.
2. Construct all related sitework and utilities for the new Administration Building and the new Police Building. This includes but is not limited to: earthwork, grading, topsoiling, building pad grading, final stone, paving, striping, wheel stops, conduit for cable/data, and propane.
3. Construct fencing, gates, and related operators and equipment for new Police Building.
4. Utilities run & connected to Admin. Building and Police Building Generator (Generator provided by Others).

5. Site Contractor responsible for temporarily stockpiling approximately 3,600 cubic yards of material and the appropriate E&S measures as shown on the CVE design plans. In late fall or winter, Site Contractor is responsible for loading, hauling, and dumping all material to 370 Evans Road, Pottstown, PA.
6. Construct the base site work for the new Public Works Building. This includes running and stubbing up of all utilities except for propane to within five (5) feet outside the proposed Public Works Building. Includes conduit for cable/data. Intent: to provide a pad-ready site for the future Public Works Building.
7. No new Public Works Building.
8. No new Public Works Generator and generator-related site utility runs, connections, fencing/gates & pads.

Alternate 1 Condition: Base Bid Condition, PLUS:

1. Construct New Public Works Building in its entirety, including but not limited to all associated site/civil elements, utilities, underground storage tanks, tap-ins, and tie-ins as indicated on the civil drawings.
2. Install Public Works Generator, run and connect all required utilities, including but not limited to the Public Works propane tank, electrical connections, and water supply (Generator provided by Others). Install generator-related site utility runs, connections, fencing/gates & pads.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)

(\$ _____ * * *)
(Figures)

ALTERNATE No. 2: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**SALLY PORT ADDITION**' and all associated components in its entirety.

Base Bid Condition:

1. No Sally Port Addition and/or all associated components.

Alternate 2 Condition:

1. In lieu of Base Bid Condition, construct the 'SALLY PORT ADDITION' and all associated components in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)

(\$ _____ * * *)
(Figures)

ALTERNATE No. 3: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**PRE-MANUFACTURED CAR PORT**' and all associated components in its entirety.

Base Bid Condition:

1. Construct new concrete slab and all associated components in its entirety.

Alternate 3 Condition:

1. In lieu of Base Bid Condition, construct the '**PRE-MANUFACTURED CAR PORT**' and all associated components in its entirety. This includes the Base Bid concrete slab construction.

Affected Contracts: GC, PC, EC, MC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 4: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT'.

Base Bid Condition:

1. Provide and install 'EPOXY PAINT' in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING.'

Alternate 4 Condition:

1. In lieu of 'EPOXY PAINT,' provide and install '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**'.

Affected Contracts: GC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 5: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

ALTERNATE No. 5 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

Alternate 5 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114', provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)'.

Affected Contracts: GC.

ADD/DEDUCT _____ * * * _____ Dollars.
(Words)
(\$ _____ * * * _____)
(Figures)

ALTERNATE No. 6: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to provide and install 'LINEAR WOOD CEILING (WD-01)' in rooms; 009, 013, 114, 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system.

Base Bid Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in rooms 009, 013, 114, and 115, provide and install a finished 5/8" gypsum ceiling system.

Alternate 6 Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in lieu of a finished 5/8" gypsum ceiling system in rooms 009, 013, 114, and 115, provide and install a 'LINEAR WOOD CEILING (WD-01)'.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ * * * _____ Dollars.
(Words)
(\$ _____ * * * _____)
(Figures)

ALTERNATE No. 7: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to provide and install '**METAL PANEL CEILING SYSTEMS (MTL-01)**' in rooms; Garage 112, Open Storage 114, and Mezzanine 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system. **ALTERNATE No. 7 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.**

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install a finished 5/8" gypsum ceiling system in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Alternate 7 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of a finished 5/8" gypsum ceiling system, provide and install '**METAL PANEL CEILING SYSTEMS (MTL-01)**' in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 8: The Bidder shall state the adjustment in price from the base bid to add the '**ENTRY DRIVE**' and all associated components from the Police Department parking to Moyer Road.

Base Bid Condition:

1. No new access drive from Police Department parking to Moyer Road.

Alternate 8 Condition:

1. Provide and install new access drive from Police Department parking to Moyer Road. This includes but is not limited to: earthwork, grading, topsoiling, final stone, paving, and striping. Includes related HOP work.
2. Alternate No.8 pertains to the access drive construction only. The balance of sitework is in the Base Bid. including but not limited to: earthwork, grading, stone, building pad grading, topsoiling, final stone, paving, striping, curb stops, curbing, and propane.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 9: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'WASH BAY 113', and all associated components (finishes, MEP, etc.).

ALTERNATE No. 9 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No. 1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'WASH BAY 113' and all associated components. Do not construct 'MEZZANINE 115'. Note that underground storage tanks are included in **Alternate No. 1**.

Alternate 9 Condition:

1. Construct 'WASH BAY 113' and all associated components and, including but not limited to finishes, MEP, etc.
2. 'MEZZANINE RM 115' construction is contingent upon acceptance of Alternate No. 10.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * _____ Dollars.
(Words)
(\$ _____ * * * _____)
(Figures)

ALTERNATE No. 10: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'MEZZANINE RM 115' and all associated components.

ALTERNATE No. 10 IS CONTINGENT UPON ACCEPTANCE OF BOTH ALTERNATES No.1 AND No. 9.

Base Bid 10 Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'MEZZANINE ROOM 115' and all associated components.

Alternate 10 Condition:

1. Construct 'MEZZANINE ROOM 115' and all associated components.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * _____ Dollars.
(Words)
(\$ _____ * * * _____)
(Figures)

ALTERNATE No. 11: The Bidder shall state the adjustment in price from the base bid to add 'RAMP TO EXISTING HOUSE,' and all associated components.

Base Bid Condition:

1. No new ramp, handrails, guards, and all related components required to provide access to the existing house. Install site grading as required to address slope change between existing house and parking.

Alternate 11 Condition:

1. Provide and install ramp, handrails, guards, and all related components required to provide access to the existing house.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 12: The Bidder shall state the adjustment in price from the base bid to add 'PAVED PATH AND BOLLARD LIGHTING BETWEEN ADMINISTRATION AND PUBLIC WORKS BUILDINGS,' and all associated components.

Base Bid Condition: 1. N/A.

Alternate 12 Condition:

1. Provide and install paved path and bollard lighting between Administration building and Public Works building and all related components required to provide access.

Affected Contracts: GC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

- **UNIT PRICES:** OWNER shall make adjustments to the Contract based on the actual field conditions encountered using the Unit Prices included with the proposal. The BIDDER agrees that OWNER reserves the right to reject or otherwise not agree to use the Unit Prices submitted, if in the Owners opinion, the nature or quantity of the Work encountered is such that the unit price cost no longer applies to the Work. The Owner also reserves the right to solicit independent proposals as required by Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid, and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from OWNER. Unit Prices shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidental costs necessary to complete the specified operation. Unit prices will be used to ADD/DEDUCT the contract cost where appropriate. The Bidder agrees that in the event of any inconsistency between a Unit Price and the extension of a Unit Price in a Material Allowance, the Unit Price shall control, the Material Allowance extension shall be recalculated.

*****ENTER UNIT PRICES ON PENNBID.*****

UNIT PRICE 1 – INSULATED GALVANIZED STEEL DUCTWORK: BIDDER agrees to provide insulated galvanized steel ductwork including hangers and accessories:

The contract Unit Price to provide insulated galvanized steel ductwork including hangers and accessories is:

\$ *** per pound

UNIT PRICE 2 – FIBERGLASS DUCT INSULATION: BIDDER agrees to provide fiberglass duct insulation:

The contract Unit Price to provide fiberglass duct insulation is:

\$ *** per square foot

UNIT PRICE 3 – JOURNEYMAN SHEET METAL WORKER: BIDDER agrees to provide journeyman sheet metal worker:

The contract Unit Price to provide a journeyman sheet metal worker for is:

\$ *** per hour

UNIT PRICE 4 – JOURNEYMAN STEAMFITTER (PIPEFITTER): BIDDER agrees to provide journeyman steamfitter (pipefitter):

The contract Unit Price to provide a journeyman steamfitter (pipefitter) is:

\$ *** per hour

- OWNER CONTINGENCY ALLOWANCE:

The Construction Manager must review with the Owner and approve all allowance work prior to the Contractor performing the Work. Should the allowance amount be exceeded, the Contractor will be paid by Change Order addition for the related Work. Similarly, should the allowance used be less than the allowance amount, the Contractor will credit the Owner for the unused quantity by a Change Order credit.

BIDDER agrees to include in the Base Bid Price, in addition to the Work shown on the Drawings and Specifications the following:

Owner Contingency Allowance, Mechanical (HVAC/MC) Construction Contract:
\$30,000.00 (Thirty Thousand Dollars and 00/100 Cents).

- Bidder accepts the provisions of the Agreement as to the liquidated damages in the event of failure to complete the Work by the dates and milestones defined in the Contract Documents.
- In submitting this Bid, it is understood that the OWNER reserves the unrestricted right to reject any and all bids, or to waive any informalities or technicalities in said Bids.
- Bidder understands that Owner reserves the right to consider Alternates Prices in determining the low bidder. All Alternate Prices shall include costs for furnishing and installing all materials, labor, tools equipment, and other incidentals necessary to complete the specified operation in accordance with the Project Specifications and the manufacturer's recommendations.

Accompanying this Bid is Security in the form of * * * in the amount of ten percent (10%) of the total of the Base Bid and all possible add alternates.

SUBMIT INFORMATION ON PENNBIID

In witness whereof, the undersigned has caused this Proposal to be executed this _ _ day of _ _ 20__.

INDIVIDUAL, PARTNERSHIP OR CORPORATION

(Firm Name)

By _____
(Signature)

Print of Type Name of Person Authorized to Sign Title

State of Incorporation _____

Business Address _____

Telephone Number _____

Email Address _____

Attest by

Print or Type Name of Person

Corporate Seal

BID FOR
UPPER POTTSGROVE TOWNSHIP NEW MUNICIPAL COMPLEX
PLUMBING CONTRACTOR

Submitted To:

Submitted By:

UPPER POTTSGROVE TOWNSHIP

1409 FARMINGTON AVENUE

POTTSTOWN, PA 19464

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER.

ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

OWNER TO AWARD PROJECT AS ONE SINGLE CONTRACT.

- The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
- BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation, those dealing with disposition of Bid Security. This Bid will remain open for NINETY (90) days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award.
- In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - BIDDER has examined copies of all Contract Documents, Advertisement to Bid, and the Instructions to Bidders. Additionally, the Bidder hereby acknowledges receipt of the following addenda by their initials:

Addendum (No. & Initial): *** ENTER ON PENNBID ***

- BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit the project site shall be no reason for future request for additional compensation or costs of any kind.
- This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, form, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or OWNER.

- The BIDDER agrees to perform the various items of Work for the following Lump Sum Prices:

Base Bid Proposal:

Base Bid Price for all work indicated on the Contract Documents. Base Bid Price must **INCLUDE ALL** Allowances for all work indicated on the Contract Documents. Base Bid Price **EXCLUDES** Unit Prices itemized later in this Bid Form.

BASE BID: NEW ADMINISTRATION & POLICE DEPARTMENT BUILDING:

* * *

(Words)

Dollars.

(\$ * * *)

(Figures)

TOTAL BID AMOUNT:

* * *

(Words)

Dollars.

(\$ * * *)

(Figures)

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the low bidder. The Bidder agrees that the contract time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such Alternate descriptions. The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the base bid or other alternate. Alternates Prices shall include the cost of furnishing, installing all materials, labor, tools, equipment and other incidentals necessary to complete the work in accordance with the design intent, manufacturers' recommendations, building codes and the project specifications. Do not adjust material allowance under any alternate bid items. Indicate whether alternate price is an add or deduct when a choice is provided. **For additional information regarding specific alternates, reference Section 01.2300 Alternates. ***ENTER ALTERNATES ON PENNBID.*****

ALTERNATE No. 1: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include the 'NEW PUBLIC WORKS BUILDING' and all associated site/civil elements as indicated on the civil drawings.

Base Bid Condition:

1. Construct new Administration Building and new Police Building.
2. Construct all related sitework and utilities for the new Administration Building and the new Police Building. This includes but is not limited to: earthwork, grading, topsoiling, building pad grading, final stone, paving, striping, wheel stops, conduit for cable/data, and propane.
3. Construct fencing, gates, and related operators and equipment for new Police Building.
4. Utilities run & connected to Admin. Building and Police Building Generator (Generator provided by Others).

5. Site Contractor responsible for temporarily stockpiling approximately 3,600 cubic yards of material and the appropriate E&S measures as shown on the CVE design plans. In late fall or winter, Site Contractor is responsible for loading, hauling, and dumping all material to 370 Evans Road, Pottstown, PA.
6. Construct the base site work for the new Public Works Building. This includes running and stubbing up of all utilities except for propane to within five (5) feet outside the proposed Public Works Building. Includes conduit for cable/data. Intent: to provide a pad-ready site for the future Public Works Building.
7. No new Public Works Building.
8. No new Public Works Generator and generator-related site utility runs, connections, fencing/gates & pads.

Alternate 1 Condition: Base Bid Condition, PLUS:

1. Construct New Public Works Building in its entirety, including but not limited to all associated site/civil elements, utilities, underground storage tanks, tap-ins, and tie-ins as indicated on the civil drawings.
2. Install Public Works Generator, run and connect all required utilities, including but not limited to the Public Works propane tank, electrical connections, and water supply (Generator provided by Others). Install generator-related site utility runs, connections, fencing/gates & pads.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 2: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**SALLY PORT ADDITION**' and all associated components in its entirety.

Base Bid Condition:

1. No Sally Port Addition and/or all associated components.

Alternate 2 Condition:

1. In lieu of Base Bid Condition, construct the 'SALLY PORT ADDITION' and all associated components in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 3: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**PRE-MANUFACTURED CAR PORT**' and all associated components in its entirety.

Base Bid Condition:

1. Construct new concrete slab and all associated components in its entirety. This includes the Base Bid concrete slab construction.

Alternate 3 Condition:

1. In lieu of Base Bid Condition, construct the 'PRE-MANUFACTURED CAR PORT' and all associated components in its entirety.

Affected Contracts: GC, PC, EC, MC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 4: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT'.

Base Bid Condition:

1. Provide and install 'EPOXY PAINT' in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING.'

Alternate 4 Condition:

1. In lieu of 'EPOXY PAINT,' provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 5: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

ALTERNATE No. 5 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

Alternate 5 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114', provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 6: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to provide and install '**LINEAR WOOD CEILING (WD-01)**' in rooms; 009, 013, 114, 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system.

Base Bid Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in rooms 009, 013, 114, and 115, provide and install a finished 5/8" gypsum ceiling system.

Alternate 6 Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in lieu of a finished 5/8" gypsum ceiling system in rooms 009, 013, 114, and 115, provide and install a 'LINEAR WOOD CEILING (WD-01)'.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 7: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to provide and install '**METAL PANEL CEILING SYSTEMS (MTL-01)**' in rooms; Garage 112, Open Storage 114, and Mezzanine 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system. **ALTERNATE No. 7 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.**

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install a finished 5/8" gypsum ceiling system in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Alternate 7 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of a finished 5/8" gypsum ceiling system, provide and install 'METAL PANEL CEILING SYSTEMS (MTL-01)' in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 8: The Bidder shall state the adjustment in price from the base bid to add the 'ENTRY DRIVE' and all associated components from the Police Department parking to Moyer Road.

Base Bid Condition:

1. No new access drive from Police Department parking to Moyer Road.

Alternate 8 Condition:

1. Provide and install new access drive from Police Department parking to Moyer Road. This includes but is not limited to: earthwork, grading, topsoiling, final stone, paving, and striping. Includes related HOP work.
2. Alternate No.8 pertains to the access drive construction only. The balance of sitework is in the Base Bid. including but not limited to: earthwork, grading, stone, building pad grading, topsoiling, final stone, paving, striping, curb stops, curbing, and propane.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 9: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'WASH BAY 113', and all associated components (finishes, MEP, etc.).

ALTERNATE No. 9 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No. 1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'WASH BAY 113' and all associated components. Do not construct 'MEZZANINE 115'. Note that underground storage tanks are included in **Alternate No. 1**.

Alternate 9 Condition:

1. Construct 'WASH BAY 113' and all associated components and, including but not limited to finishes, MEP, etc.
2. 'MEZZANINE RM 115' construction is contingent upon acceptance of Alternate No. 10.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 10: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'MEZZANINE RM 115' and all associated components.

ALTERNATE No. 10 IS CONTINGENT UPON ACCEPTANCE OF BOTH ALTERNATES No.1 AND No. 9.

Base Bid 10 Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'MEZZANINE ROOM 115' and all associated components.

Alternate 10 Condition:

1. Construct 'MEZZANINE ROOM 115' and all associated components.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * _____ Dollars.
(Words)
(\$ _____ * * * _____)
(Figures)

ALTERNATE No. 11: The Bidder shall state the adjustment in price from the base bid to add 'RAMP TO EXISTING HOUSE,' and all associated components.

Base Bid Condition:

1. No new ramp, handrails, guards, and all related components required to provide access to the existing house. Install site grading as required to address slope change between existing house and parking.

Alternate 11 Condition:

1. Provide and install ramp, handrails, guards, and all related components required to provide access to the existing house.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * _____ Dollars.
(Words)
(\$ _____ * * * _____)
(Figures)

ALTERNATE No. 12: The Bidder shall state the adjustment in price from the base bid to add 'PAVED PATH AND BOLLARD LIGHTING BETWEEN ADMINISTRATION AND PUBLIC WORKS BUILDINGS,' and all associated components.

Base Bid Condition: 1. N/A.

Alternate 12 Condition:

1. Provide and install paved path and bollard lighting between Administration building and Public Works building and all related components required to provide access.

Affected Contracts: GC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

- **UNIT PRICES:** OWNER shall make adjustments to the Contract based on the actual field conditions encountered using the Unit Prices included with the proposal. The BIDDER agrees that OWNER reserves the right to reject or otherwise not agree to use the Unit Prices submitted, if in the Owners opinion, the nature or quantity of the Work encountered is such that the unit price cost no longer applies to the Work. The Owner also reserves the right to solicit independent proposals as required by the Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid, and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from OWNER. Unit Prices shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidental costs necessary to complete the specified operation. Unit prices will be used to ADD/DEDUCT the contract cost where appropriate. The Bidder agrees that in the event of any inconsistency between a Unit Price and the extension of a Unit Price in a Material Allowance, the Unit Price shall control, the Material Allowance extension shall be recalculated.

*****ENTER UNIT PRICES ON PENNBID.*****

UNIT PRICE 1 – JOURNEYMAN PLUMBER: BIDDER agrees to provide a journeyman plumber:

The contract Unit Price is: \$ *** per hour

UNIT PRICE 2 – 3/4" COPPER PIPING: BIDDER agrees to provide 3/4" type L copper piping including hangers and insulation:

The contract Unit Price to provide 3/4" inch type L copper piping including hangers and insulation is: \$ *** per linear foot

UNIT PRICE 3 – 2" COPPER PIPING: BIDDER agrees to provide 2" type L copper piping including hangers and insulation:

The contract Unit Price to provide 2" inch type L copper piping including hangers and insulation is: \$ *** per linear foot

UNIT PRICE 4 – ¾" BRONZE FULL PORT BALL VALVE: BIDDER agrees to provide ¾" bronze full port ball valve:

The contract Unit Price is: \$ *** per valve

UNIT PRICE 5 – 2" BRONZE FULL PORT BALL VALVE: BIDDER agrees to provide 2" bronze full port ball valve:

The contract Unit Price is: \$ *** per valve

UNIT PRICE 6 – TRENCH ROCK: BIDDER agrees to excavate and dispose of trench rock encountered and replace with compacted 2A modified natural stone. All rock must be identified and measured in the field by the Construction Manager prior to and during removal. Rock shall be removed by mechanical methods only; no blasting will be permitted:

The contract Unit Price for rock excavation by ram hammer is: \$ *** per cubic yard

UNIT PRICE 7 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH STONE: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with compacted select engineered fill. All removal must be identified and measured in situ by the Owner's representative.

The contract Unit Price for up to 400 cubic yards in one defined contiguous area is: \$ *** per cubic yard

UNIT PRICE 8 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH CONCRETE: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed 2000-psi concrete mix. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard is: \$ *** per cubic yard

UNIT PRICE 9 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH SUITABLE SOIL: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed suitable soils. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard for quantities less than 100 cubic yards in one defined contiguous area is: \$ *** per cubic yard

UNIT PRICE 10 – CONTAMINATED MATERIALS REMOVAL AND DISPOSAL: There is the potential that soil may be contaminated with various products during excavations around the site such as diesel fuel, gasoline, motor oil, lubricating oil and anti-freeze. BIDDER agrees to excavate, remove and legally dispose of contaminated soils encountered and replace with compacted 2A modified natural stone. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price per ton is: \$ *** per ton

UNIT PRICE 11 – HAZARDOUS WASTE TESTING, REMOVAL, AND DISPOSAL: BIDDER agrees to excavate, remove and legally dispose of Hazardous Waste encountered and replace with select engineered fill. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price for removal of soils tested and identified as Hazardous Waste and replacement with select engineered fill in quantities of less than 10 tons in one contiguous area is: **\$*** per ton**

- OWNER CONTINGENCY ALLOWANCE:

The Construction Manager must review with the Owner and approve all allowance work prior to the Contractor performing the Work. Should the allowance amount be exceeded, the Contractor will be paid by Change Order addition for the related Work. Similarly, should the allowance used be less than the allowance amount, the Contractor will credit the Owner for the unused quantity by a Change Order credit.

BIDDER agrees to include in the Base Bid Price, in addition to the Work shown on the Drawings and Specifications the following:

Owner Contingency Allowance, Plumbing Construction Contract:
\$20,000.00 (Twenty Thousand Dollars and 00/100 Cents).

- Bidder accepts the provisions of the Agreement as to the liquidated damages in the event of failure to complete the Work by the dates and milestones defined in the Contract Documents.
- In submitting this Bid, it is understood that the OWNER reserves the unrestricted right to reject any and all bids, or to waive any informalities or technicalities in said Bids.
- Bidder understands that Owner reserves the right to consider Alternates Prices in determining the low bidder. All Alternate Prices shall include costs for furnishing and installing all materials, labor, tools equipment, and other incidentals necessary to complete the specified operation in accordance with the Project Specifications and the manufacturer's recommendations.

Accompanying this Bid is Security in the form of *** in the amount of ten percent (10%) of the total of the Base Bid and all possible add alternates.

In witness whereof, the undersigned has caused this Proposal to be executed this _ _ day of _ _ 20__.

INDIVIDUAL, PARTNERSHIP OR CORPORATION

(Firm Name)

By _____
(Signature)

Print of Type Name of Person Authorized to Sign Title

State of Incorporation _____

Business Address _____

Telephone Number _____

Email Address _____

Attest by

Print or Type Name of Person

Corporate Seal

BID FOR
UPPER POTTSGROVE TOWNSHIP NEW MUNICIPAL COMPLEX
ELECTRICAL CONTRACTOR

Submitted To:

Submitted By:

UPPER POTTSGROVE TOWNSHIP

1409 FARMINGTON AVENUE

POTTSTOWN, PA 19464

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER.

ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

OWNER TO AWARD PROJECT AS ONE SINGLE CONTRACT.

- The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
- BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation, those dealing with disposition of Bid Security. This Bid will remain open for NINETY (90) days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award.
- In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - BIDDER has examined copies of all Contract Documents, Advertisement to Bid, and the Instructions to Bidders. Additionally, the Bidder hereby acknowledges receipt of the following addenda by their initials:

Addendum (No. & Initial): *** ENTER ON PENNBID ***

- BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit the project site shall be no reason for future request for additional compensation or costs of any kind.
- This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, form, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or OWNER.

- The BIDDER agrees to perform the various items of Work for the following Lump Sum Prices:

Base Bid Proposal:

Base Bid Price for all work indicated on the Contract Documents. Base Bid Price must **INCLUDE ALL** Allowances for all work indicated on the Contract Documents. Base Bid Price **EXCLUDES** Unit Prices itemized later in this Bid Form.

BASE BID: NEW ADMINISTRATION & POLICE DEPARTMENT BUILDING:

_____ Dollars.
(Words)
(\$ _____)
(Figures)

TOTAL BID AMOUNT:

_____ Dollars.
(Words)
(\$ _____)
(Figures)

- ALTERNATES:** The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the low bidder. The Bidder agrees that the contract time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such Alternate descriptions. The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the base bid or other alternate. Alternates Prices shall include the cost of furnishing, installing all materials, labor, tools, equipment and other incidentals necessary to complete the work in accordance with the design intent, manufacturers' recommendations, building codes and the project specifications. Do not adjust material allowance under any alternate bid items. Indicate whether alternate price is an add or deduct when a choice is provided. **For additional information regarding specific alternates, reference Section 01.2300 Alternates. ***ENTER ALTERNATES ON PENNBID.*****

ALTERNATE No. 1: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include the '**NEW PUBLIC WORKS BUILDING**' and all associated site/civil elements as indicated on the civil drawings.

Base Bid Condition:

- Construct new Administration Building and new Police Building.
- Construct all related sitework and utilities for the new Administration Building and the new Police Building. This includes but is not limited to: earthwork, grading, topsoiling, building pad grading, final stone, paving, striping, wheel stops, conduit for cable/data, and propane.
- Construct fencing, gates, and related operators and equipment for new Police Building.
- Utilities run & connected to Admin. Building and Police Building Generator (Generator provided by Others).

5. Site Contractor responsible for temporarily stockpiling approximately 3,600 cubic yards of material and the appropriate E&S measures as shown on the CVE design plans. In late fall or winter, Site Contractor is responsible for loading, hauling, and dumping all material to 370 Evans Road, Pottstown, PA.
6. Construct the base site work for the new Public Works Building. This includes running and stubbing up of all utilities except for propane to within five (5) feet outside the proposed Public Works Building. Includes conduit for cable/data. Intent: to provide a pad-ready site for the future Public Works Building.
7. No new Public Works Building.
8. No new Public Works Generator and generator-related site utility runs, connections, fencing/gates & pads.

Alternate 1 Condition: Base Bid Condition, PLUS:

1. Construct New Public Works Building in its entirety, including but not limited to all associated site/civil elements, utilities, underground storage tanks, tap-ins, and tie-ins as indicated on the civil drawings.
2. Install Public Works Generator, run and connect all required utilities, including but not limited to the Public Works propane tank, electrical connections, and water supply (Generator provided by Others). Install generator-related site utility runs, connections, fencing/gates & pads.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 2: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**SALLY PORT ADDITION**' and all associated components in its entirety.

Base Bid Condition:

1. No Sally Port Addition and/or all associated components.

Alternate 2 Condition:

1. In lieu of Base Bid Condition, construct the 'SALLY PORT ADDITION' and all associated components in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 3: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**PRE-MANUFACTURED CAR PORT**' and all associated components in its entirety.

Base Bid Condition:

1. Construct new concrete slab and all associated components in its entirety. This includes the Base Bid concrete slab construction.

Alternate 3 Condition:

1. In lieu of Base Bid Condition, construct the 'PRE-MANUFACTURED CAR PORT' and all associated components in its entirety.

Affected Contracts: GC, PC, EC, MC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 4: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT'.

Base Bid Condition:

1. Provide and install 'EPOXY PAINT' in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING.'

Alternate 4 Condition:

1. In lieu of 'EPOXY PAINT,' provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 5: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

ALTERNATE No. 5 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

Alternate 5 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114', provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 6: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to provide and install '**LINEAR WOOD CEILING (WD-01)**' in rooms; 009, 013, 114, 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system.

Base Bid Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in rooms 009, 013, 114, and 115, provide and install a finished 5/8" gypsum ceiling system.

Alternate 6 Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in lieu of a finished 5/8" gypsum ceiling system in rooms 009, 013, 114, and 115, provide and install a 'LINEAR WOOD CEILING (WD-01)'.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 7: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to provide and install '**METAL PANEL CEILING SYSTEMS (MTL-01)**' in rooms; Garage 112, Open Storage 114, and Mezzanine 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system. **ALTERNATE No. 7 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.**

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install a finished 5/8" gypsum ceiling system in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Alternate 7 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of a finished 5/8" gypsum ceiling system, provide and install 'METAL PANEL CEILING SYSTEMS (MTL-01)' in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 8: The Bidder shall state the adjustment in price from the base bid to add the 'ENTRY DRIVE' and all associated components from the Police Department parking to Moyer Road.

Base Bid Condition:

1. No new access drive from Police Department parking to Moyer Road.

Alternate 8 Condition:

1. Provide and install new access drive from Police Department parking to Moyer Road. This includes but is not limited to: earthwork, grading, topsoiling, final stone, paving, and striping. Includes related HOP work.
2. Alternate No.8 pertains to the access drive construction only. The balance of sitework is in the Base Bid. including but not limited to: earthwork, grading, stone, building pad grading, topsoiling, final stone, paving, striping, curb stops, curbing, and propane.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)

(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 9: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'WASH BAY 113', and all associated components (finishes, MEP, etc.).

ALTERNATE No. 9 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No. 1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'WASH BAY 113' and all associated components. Do not construct 'MEZZANINE 115'. Note that underground storage tanks are included in **Alternate No. 1**.

Alternate 9 Condition:

1. Construct 'WASH BAY 113' and all associated components and, including but not limited to finishes, MEP, etc.
2. 'MEZZANINE RM 115' construction is contingent upon acceptance of Alternate No. 10.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)

(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 10: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'MEZZANINE RM 115' and all associated components.

ALTERNATE No. 10 IS CONTINGENT UPON ACCEPTANCE OF BOTH ALTERNATES No.1 AND No. 9.

Base Bid 10 Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'MEZZANINE ROOM 115' and all associated components.

Alternate 10 Condition:

1. Construct 'MEZZANINE ROOM 115' and all associated components.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 11: The Bidder shall state the adjustment in price from the base bid to add 'RAMP TO EXISTING HOUSE,' and all associated components.

Base Bid Condition:

1. No new ramp, handrails, guards, and all related components required to provide access to the existing house. Install site grading as required to address slope change between existing house and parking.

Alternate 11 Condition:

1. Provide and install ramp, handrails, guards, and all related components required to provide access to the existing house.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

ALTERNATE No. 12: The Bidder shall state the adjustment in price from the base bid to add 'PAVED PATH AND BOLLARD LIGHTING BETWEEN ADMINISTRATION AND PUBLIC WORKS BUILDINGS,' and all associated components.

Base Bid Condition: 1. N/A.

Alternate 12 Condition:

1. Provide and install paved path and bollard lighting between Administration building and Public Works building and all related components required to provide access.

Affected Contracts: GC, EC, SC.

ADD/DEDUCT _____ ***** ***** ***** _____ Dollars.
(Words)
(\$ _____ ***** ***** ***** _____)
(Figures)

- **UNIT PRICES:** OWNER shall make adjustments to the Contract based on the actual field conditions encountered using the Unit Prices included with the proposal. The BIDDER agrees that OWNER reserves the right to reject or otherwise not agree to use the Unit Prices submitted, if in the Owners opinion, the nature or quantity of the Work encountered is such that the unit price cost no longer applies to the Work. The Owner also reserves the right to solicit independent proposals as required by the Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid, and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from OWNER. Unit Prices shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidental costs necessary to complete the specified operation. Unit prices will be used to ADD/DEDUCT the contract cost where appropriate. The Bidder agrees that in the event of any inconsistency between a Unit Price and the extension of a Unit Price in a Material Allowance, the Unit Price shall control, the Material Allowance extension shall be recalculated.

*****ENTER UNIT PRICES ON PENNBID.*****

UNIT PRICE 1 – TRENCH ROCK: BIDDER agrees to excavate and dispose of trench rock encountered and replace with compacted 2A modified natural stone. All rock must be identified and measured in the field by the Construction Manager prior to and during removal. Rock shall be removed by mechanical methods only; no blasting will be permitted:

The contract Unit Price for rock excavation by ram hammer is:

\$ *** per cubic yard

UNIT PRICE 2 – JOURNEYMAN ELECTRICIAN: BIDDER agrees to provide a journeyman electrician:

The contract Unit Price to provide a journeyman electrician is:

\$ *** per hour

UNIT PRICE 3 – ADDITIONAL EQUIPMENT: BIDDER agrees to furnish and install additional duplex receptacle and 20A circuit, including 20/1 circuit breaker, box, faceplate and 100' one-way circuit distance:

The contract Unit Price to provide **(15) FIFTEEN** additional duplex receptacles and 20A circuits, including 20/1 circuit breakers, boxes, faceplates and 100' one-way circuit distance for each is:

\$ *** per outlet

UNIT PRICE 4 – FIRE ALARM DEVICES: BIDDER agrees to furnish and install additional fire alarm audio/visual devices including 250' of wire and accessories:

The contract Unit Price to provide **(15) FIFTEEN** additional fire alarm audio/visual devices is:

\$ *** per device

UNIT PRICE 5 – SMOKE DETECTOR DEVICES: BIDDER agrees to furnish and install additional smoke detector device including 200' of wire and accessories:

The contract Unit Price to provide **(10) TEN** smoke alarm devices is:

\$ *** per device

UNIT PRICE 6 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH *STONE*: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with compacted select engineered fill. All removal must be identified and measured in situ by the Owner's representative.

The contract Unit Price for up to 400 cubic yards in one defined contiguous area is:

\$ *** per cubic yard

UNIT PRICE 7 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH *CONCRETE*: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed 2000-psi concrete mix.. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard is:

\$ *** per cubic yard

UNIT PRICE 8 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH *SUITABLE SOIL*: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed suitable soils. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard for quantities less than 100 cubic yards in one defined contiguous area is:

\$ *** per cubic yard

UNIT PRICE 9 – CONTAMINATED MATERIALS REMOVAL AND DISPOSAL: There is the potential that soil may be contaminated with various products during excavations around the site such as diesel fuel, gasoline, motor oil, lubricating oil and anti-freeze. BIDDER agrees to excavate, remove and legally dispose of contaminated soils encountered and replace with compacted 2A modified natural stone. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price per ton is:

\$ *** per ton

UNIT PRICE 10 – HAZARDOUS WASTE TESTING, REMOVAL, AND DISPOSAL: BIDDER agrees to excavate, remove and legally dispose of Hazardous Waste encountered and replace with select engineered fill. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price for removal of soils tested and identified as Hazardous Waste and replacement with select engineered fill in quantities of less than 10 tons in one contiguous area is:

\$ *** per ton

- OWNER CONTINGENCY ALLOWANCE:

The Construction Manager must review with the Owner and approve all allowance work prior to the Contractor performing the Work. Should the allowance amount be exceeded, the Contractor will be paid by Change Order addition for the related Work. Similarly, should the allowance used be less than the allowance amount, the Contractor will credit the Owner for the unused quantity by a Change Order credit.

BIDDER agrees to include in the Base Bid Price, in addition to the Work shown on the Drawings and Specifications the following:

Owner Contingency Allowance, Electrical Construction Contract:
\$40,000.00 (Forty Thousand Dollars and 00/100 Cents).

- Bidder accepts the provisions of the Agreement as to the liquidated damages in the event of failure to complete the Work by the dates and milestones defined in the Contract Documents.
- In submitting this Bid, it is understood that the OWNER reserves the unrestricted right to reject any and all bids, or to waive any informalities or technicalities in said Bids.
- Bidder understands that Owner reserves the right to consider Alternates Prices in determining the low bidder. All Alternate Prices shall include costs for furnishing and installing all materials, labor, tools equipment, and other incidentals necessary to complete the specified operation in accordance with the Project Specifications and the manufacturer's recommendations.

Accompanying this Bid is Security in the form of *** in the amount of ten percent (10%) of the total of the Base Bid and all possible add alternates.

In witness whereof, the undersigned has caused this Proposal to be executed this _ _ day of _ _ 20__.

INDIVIDUAL, PARTNERSHIP OR CORPORATION

(Firm Name)

By _____
(Signature)

Print of Type Name of Person Authorized to Sign Title

State of Incorporation _____

Business Address _____

Telephone Number _____

Email Address _____

Attest by

Print or Type Name of Person

Corporate Seal

BID FOR
UPPER POTTSGROVE TOWNSHIP NEW MUNICIPAL COMPLEX
SITE CONTRACTOR

Submitted To:

Submitted By:

UPPER POTTSGROVE TOWNSHIP

1409 FARMINGTON AVENUE

POTTSTOWN, PA 19464

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER.

ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

OWNER TO AWARD PROJECT AS ONE SINGLE CONTRACT.

- The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
- BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation, those dealing with disposition of Bid Security. This Bid will remain open for NINETY (90) days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award.
- In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - BIDDER has examined copies of all Contract Documents, Advertisement to Bid, and the Instructions to Bidders. Additionally, the Bidder hereby acknowledges receipt of the following addenda by their initials:

Addendum (No. & Initial): *** ENTER ON PENNBID ***

- BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit the project site shall be no reason for future request for additional compensation or costs of any kind.
- This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, form, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or OWNER.

- The BIDDER agrees to perform the various items of Work for the following Lump Sum Prices:

Base Bid Proposal:

Base Bid Price for all work indicated on the Contract Documents. Base Bid Price must **INCLUDE ALL** Allowances for all work indicated on the Contract Documents. Base Bid Price **EXCLUDES** Unit Prices itemized later in this Bid Form.

BASE BID: NEW ADMINISTRATION & POLICE DEPARTMENT BUILDING:

* * *

(Words)

Dollars.

(\$ * * *)

(Figures)

TOTAL BID AMOUNT:

* * *

(Words)

Dollars.

(\$ * * *)

(Figures)

- ALTERNATES:** The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the low bidder. The Bidder agrees that the contract time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such Alternate descriptions. The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the base bid or other alternate. Alternates Prices shall include the cost of furnishing, installing all materials, labor, tools, equipment and other incidentals necessary to complete the work in accordance with the design intent, manufacturers' recommendations, building codes and the project specifications. Do not adjust material allowance under any alternate bid items. Indicate whether alternate price is an add or deduct when a choice is provided. **For additional information regarding specific alternates, reference Section 01.2300 Alternates. ***ENTER ALTERNATES ON PENNBID.*****

ALTERNATE No. 1: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include the **'NEW PUBLIC WORKS BUILDING'** and all associated site/civil elements as indicated on the civil drawings.

Base Bid Condition:

- Construct new Administration Building and new Police Building.
- Construct all related sitework and utilities for the new Administration Building and the new Police Building. This includes but is not limited to: earthwork, grading, topsoiling, building pad grading, final stone, paving, striping, wheel stops, conduit for cable/data, and propane.
- Construct fencing, gates, and related operators and equipment for new Police Building.

4. Utilities run & connected to Admin. Building and Police Building Generator (Generator provided by Others).
5. Site Contractor responsible for temporarily stockpiling approximately 3,600 cubic yards of material and the appropriate E&S measures as shown on the CVE design plans. In late fall or winter, Site Contractor is responsible for loading, hauling, and dumping all material to 370 Evans Road, Pottstown, PA.
6. Construct the base site work for the new Public Works Building. This includes running and stubbing up of all utilities except for propane to within five (5) feet outside the proposed Public Works Building. Includes conduit for cable/data. Intent: to provide a pad-ready site for the future Public Works Building.
7. No new Public Works Building.
8. No new Public Works Generator and generator-related site utility runs, connections, fencing/gates & pads.

Alternate 1 Condition: Base Bid Condition, PLUS:

1. Construct New Public Works Building in its entirety, including but not limited to all associated site/civil elements, utilities, underground storage tanks, tap-ins, and tie-ins as indicated on the civil drawings.
2. Install Public Works Generator, run and connect all required utilities, including but not limited to the Public Works propane tank, electrical connections, and water supply (Generator provided by Others). Install generator-related site utility runs, connections, fencing/gates & pads.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 2: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**SALLY PORT ADDITION**' and all associated components in its entirety.

Base Bid Condition:

1. No Sally Port Addition and/or all associated components.

Alternate 2 Condition:

1. In lieu of Base Bid Condition, construct the '**SALLY PORT ADDITION**' and all associated components in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)
(\$ _____ * * *)
(Figures)

ALTERNATE No. 3: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include the '**PRE-MANUFACTURED CAR PORT**' and all associated components in its entirety.

Base Bid Condition:

1. Construct new concrete slab and all associated components in its entirety. This includes the Base Bid concrete slab construction.

Alternate 3 Condition:

1. In lieu of Base Bid Condition, construct the 'PRE-MANUFACTURED CAR PORT' and all associated components in its entirety.

Affected Contracts: GC, PC, EC, MC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 4: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT'.

Base Bid Condition:

1. Provide and install 'EPOXY PAINT' in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING.'

Alternate 4 Condition:

1. In lieu of 'EPOXY PAINT,' provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 5: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include '**EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01)**' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

ALTERNATE No. 5 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114'.

Alternate 5 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of 'EPOXY PAINT' at 'Garage 112' and 'Open Storage 114', provide and install 'EPOXY FLOORING-KEY RESIN (EP-01 & EWB-01).'

Affected Contracts: GC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 6: The Bidder shall state the adjustment in the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING' price from the base bid to provide and install '**LINEAR WOOD CEILING (WD-01)**' in rooms; 009, 013, 114, 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system.

Base Bid Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in rooms 009, 013, 114, and 115, provide and install a finished 5/8" gypsum ceiling system.

Alternate 6 Condition:

1. In the 'NEW ADMINISTRATION AND POLICE DEPARTMENT BUILDING,' in lieu of a finished 5/8" gypsum ceiling system in rooms 009, 013, 114, and 115, provide and install a 'LINEAR WOOD CEILING (WD-01)'.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 7: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to provide and install '**METAL PANEL CEILING SYSTEMS (MTL-01)**' in rooms; Garage 112, Open Storage 114, and Mezzanine 115 in its entirety in lieu of a finished 5/8" gypsum ceiling system. **ALTERNATE No. 7 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No.1.**

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' provide and install a finished 5/8" gypsum ceiling system in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Alternate 7 Condition:

1. In the 'NEW PUBLIC WORKS BUILDING,' in lieu of a finished 5/8" gypsum ceiling system, provide and install 'METAL PANEL CEILING SYSTEMS (MTL-01)' in rooms: Garage 112, Open Storage 114, and Mezzanine 115 in its entirety.

Affected Contracts: GC, HVAC/MC, PC, EC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)

(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 8: The Bidder shall state the adjustment in price from the base bid to add the 'ENTRY DRIVE' and all associated components from the Police Department parking to Moyer Road.

Base Bid Condition:

1. No new access drive from Police Department parking to Moyer Road.

Alternate 8 Condition:

1. Provide and install new access drive from Police Department parking to Moyer Road. This includes but is not limited to: earthwork, grading, topsoiling, final stone, paving, and striping. Includes related HOP work.
2. Alternate No.8 pertains to the access drive construction only. The balance of sitework is in the Base Bid. including but not limited to: earthwork, grading, stone, building pad grading, topsoiling, final stone, paving, striping, curb stops, curbing, and propane.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)

(\$ _____ * * *)
(Figures)

ALTERNATE No. 9: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include 'WASH BAY 113', and all associated components (finishes, MEP, etc.).

ALTERNATE No. 9 IS CONTINGENT UPON ACCEPTANCE OF ALTERNATE No. 1.

Base Bid Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'WASH BAY 113' and all associated components. Do not construct 'MEZZANINE 115'. Note that underground storage tanks are included in **Alternate No. 1**.

Alternate 9 Condition:

1. Construct 'WASH BAY 113' and all associated components and, including but not limited to finishes, MEP, etc.
2. 'MEZZANINE RM 115' construction is contingent upon acceptance of Alternate No. 10.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ * * * Dollars.
(Words)

(\$ _____ * * *)
(Figures)

ALTERNATE No. 10: The Bidder shall state the adjustment in the 'NEW PUBLIC WORKS BUILDING' price from the base bid to include '**MEZZANINE RM 115**' and all associated components.

ALTERNATE No. 10 IS CONTINGENT UPON ACCEPTANCE OF BOTH ALTERNATES No.1 AND No. 9.

Base Bid 10 Condition:

1. N/A.

Alternate 1 Condition:

1. Do not construct 'MEZZANINE ROOM 115' and all associated components.

Alternate 10 Condition:

1. Construct 'MEZZANINE ROOM 115' and all associated components.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 11: The Bidder shall state the adjustment in price from the base bid to add '**RAMP TO EXISTING HOUSE,**' and all associated components.

Base Bid Condition:

1. No new ramp, handrails, guards, and all related components required to provide access to the existing house. Install site grading as required to address slope change between existing house and parking.

Alternate 11 Condition:

1. Provide and install ramp, handrails, guards, and all related components required to provide access to the existing house.

Affected Contracts: GC, HVAC/MC, PC, EC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

ALTERNATE No. 12: The Bidder shall state the adjustment in price from the base bid to add '**PAVED PATH AND BOLLARD LIGHTING BETWEEN ADMINISTRATION AND PUBLIC WORKS BUILDINGS,**' and all associated components.

Base Bid Condition: 1. N/A.

Alternate 12 Condition:

1. Provide and install paved path and bollard lighting between Administration building and Public Works building and all related components required to provide access.

Affected Contracts: GC, EC, SC.

ADD/DEDUCT _____ *** * *** _____ Dollars.
(Words)
(\$ _____ *** * *** _____)
(Figures)

- **UNIT PRICES:** OWNER shall make adjustments to the Contract based on the actual field conditions encountered using the Unit Prices included with the proposal. The BIDDER agrees that OWNER reserves the right to reject or otherwise not agree to use the Unit Prices submitted, if in the Owners opinion, the nature or quantity of the Work encountered is such that the unit price cost no longer applies to the Work. The Owner also reserves the right to solicit independent proposals as required by Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid, and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from OWNER. Unit Prices shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidental costs necessary to complete the specified operation. Unit prices will be used to ADD/DEDUCT the contract cost where appropriate. The Bidder agrees that in the event of any inconsistency between a Unit Price and the extension of a Unit Price in a Material Allowance, the Unit Price shall control, the Material Allowance extension shall be recalculated.

*****ENTER UNIT PRICES ON PENNBID.*****

UNIT PRICE 1 – TRENCH ROCK: BIDDER agrees to excavate and dispose of trench rock encountered and replace with compacted 2A modified natural stone. All rock must be identified and measured in the field by the Construction Manager prior to and during removal. Rock shall be removed by mechanical methods only; no blasting will be permitted:

The contract Unit Price for rock excavation by ram hammer is:

\$ *** per cubic yard

UNIT PRICE 2 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH STONE: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with compacted select engineered fill. All removal must be identified and measured in situ by the Owner's representative.

The contract Unit Price for up to 400 cubic yards in one defined contiguous area is:

\$ *** per cubic yard

UNIT PRICE 3 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH CONCRETE: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed 2000-psi concrete mix.. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard is:

\$ *** per cubic yard

UNIT PRICE 4 – UNSUITABLE SOIL REMOVAL AND REPLACEMENT WITH SUITABLE SOIL: BIDDER agrees to excavate, remove and legally dispose off-site, unstable materials encountered and replaced with properly placed suitable soils. All removal must be measured in situ by the Owner's representative.

The contract Unit Price per cubic yard for quantities less than 100 cubic yards in one defined contiguous area is:

\$ *** per cubic yard

UNIT PRICE 5 – CONTAMINATED MATERIALS REMOVAL AND DISPOSAL: There is the potential that soil may be contaminated with various products during excavations around the site such as diesel fuel, gasoline, motor oil, lubricating oil and anti-freeze. BIDDER agrees to excavate, remove and legally dispose of contaminated soils encountered and replace with compacted 2A modified natural stone. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price per ton is:

\$ *** per ton

UNIT PRICE 6 – HAZARDOUS WASTE TESTING, REMOVAL, AND DISPOSAL: BIDDER agrees to excavate, remove and legally dispose of Hazardous Waste encountered and replace with select engineered fill. All testing will be conducted by owner retained testing agency. All removal must be identified and measured in the field by the Owner's representative:

The contract Unit Price for removal of soils tested and identified as Hazardous Waste and replacement with select engineered fill in quantities of less than 10 tons in one contiguous area is:

\$ *** per ton

UNIT PRICE 7 –LABORER (Class 03): BIDDER agrees to provide a laborer (Class 03) at the following unit price:

The contract Unit Price per hour is:

\$ *** per hour

UNIT PRICE 8 –SIDEWALK AND SUBBASE: BIDDER agrees to construct concrete sidewalk and related subbase as per Project Specifications, at the following unit price:

The contract Unit Price per square foot is:

\$*** per square foot (SF)

UNIT PRICE 9 –CURBING: BIDDER agrees to construct curbing as per Project Specifications, at the following unit price:

The contract Unit Price per linear foot is:

\$*** per linear foot (LF)

- OWNER CONTINGENCY ALLOWANCES:

The Construction Manager must review with the Owner and approve all allowance work prior to the Contractor performing the Work. Should the allowance amount be exceeded, the Contractor will be paid by Change Order addition for the related Work. Similarly, should the allowance used be less than the allowance amount, the Contractor will credit the Owner for the unused quantity by a Change Order credit.

BIDDER agrees to include in the Base Bid Price, in addition to the Work shown on the Drawings and Specifications the following:

Owner Contingency Allowance, Site Construction Contract:

\$100,000.00 (One Hundred Thousand Dollars and 00/100 Cents).

Owner Contingency Allowance – Site Rock, Site Construction Contract:

\$50,000.00 (Fifty Thousand Dollars and 00/100 Cents).

Note: This dollar amount is in addition to the amount that the Geotechnical Report states exists as “rippable”.

Owner Contingency Allowance – Site NPDES Potential Changes, Site Construction Contract:

\$25,000.00 (Twenty-Five Thousand Dollars and 00/100 Cents).

Owner Contingency Allowance – Access to Gilbertsville Road Highway Occupancy Permit (HOP) Potential Changes, Site Construction Contract:

\$25,000.00 (Twenty-Five Thousand Dollars and 00/100 Cents).

Owner Contingency Allowance – Existing Septic System (locate, demolish, remove, and backfill), Site Construction Contract:

\$75,000.00 (Twenty-Five Thousand Dollars and 00/100 Cents).

- Bidder accepts the provisions of the Agreement as to the liquidated damages in the event of failure to complete the Work by the dates and milestones defined in the Contract Documents.
- In submitting this Bid, it is understood that the OWNER reserves the unrestricted right to reject any and all bids, or to waive any informalities or technicalities in said Bids.
- Bidder understands that Owner reserves the right to consider Alternates Prices in determining the low bidder. All Alternate Prices shall include costs for furnishing and installing all materials, labor, tools equipment, and other incidentals necessary to complete the specified operation in accordance with the Project Specifications and the manufacturer’s recommendations.

Accompanying this Bid is Security in the form of *** in the amount of ten percent (10%) of the total of the Base Bid and all possible add alternates.

In witness whereof, the undersigned has caused this Proposal to be executed this _ _ day of _ _ 20__.

INDIVIDUAL, PARTNERSHIP OR CORPORATION

(Firm Name)

By _____
(Signature)

Print of Type Name of Person Authorized to Sign Title

State of Incorporation _____

Business Address _____

Telephone Number _____

Email Address _____

Attest by

Print or Type Name of Person

Corporate Seal

SECTION 004300 - BID SECURITY & BONDS

BID SECURITY

The Bid Security utilized for this project shall be a "Bid Bond", AIA Document A 310-2010. Reference the Instructions to Bidders for the execution of this document.

PERFORMANCE BOND AND PAYMENT BOND

The "Performance Bond and Payment Bond", AIA Document A 312-2010, shall be utilized for this project. Reference the Instructions to Bidders for the execution of this document.

END OF DOCUMENT

SECTION 00.5216 – AGREEMENT FORM

The “Standard Form of Agreement between Owner and Contractor, Construction Manager as Advisor” AIA Document A13 2- 2019 Edition shall be in effect for the duration of this project. An original copy of this document will be presented to the bidder for execution upon notification.

END OF DOCUMENT

DRAFT AIA® Document A132® – 2019

Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition

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

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

« »
« »
« »
« »

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

« »
« »
« »
« »

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

« »
« »
« »

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

« »
« »
« »
« »

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

« »
« »
« »
« »

The Owner and Contractor agree as follows.

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

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

This document is intended to be used in conjunction with AIA Documents A232™-2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™-2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™-2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser. AIA Document A232™-2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

☐ [« »] The date of this Agreement.

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

☐ [« »] Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

« »

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

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

§ 3.3 Substantial Completion of the Project or Portions Thereof

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the date of Substantial Completion of the Work of all of the Contractors for the Project will be:

(Insert the date of Substantial Completion of the Work of all Contractors for the Project.)

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

Portion of Work

Substantial Completion Date

§ 3.4 When the Work of this Contract, or any Portion Thereof, is Substantially Complete

§ 3.4.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall substantially complete the entire Work of this Contract:

(Check one of the following boxes and complete the necessary information.)

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

[☐] By the following date:

§ 3.4.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of this Contract are to be substantially complete prior to when the entire Work of this Contract shall be substantially complete, the Contractor shall substantially complete such portions by the following dates:

Portion of Work

Date to be substantially complete

§ 3.4.3 If the Contractor fails to substantially complete the Work of this Contract, or portions thereof, as provided in this Section 3.4, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:

(Check the appropriate box.)

[☐] Stipulated Sum, in accordance with Section 4.2 below

[☐] Cost of the Work plus the Contractor's Fee, in accordance with Section 4.3 below

[☐] Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2.2 Alternates

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

Item

Price

§ 4.2.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.2.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.2.4 Unit prices, if any:
(Identify the item and state the unit price, and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.3 Cost of the Work Plus Contractor's Fee without a Guaranteed Maximum Price

§ 4.3.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.3.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

« »

§ 4.3.3 The method of adjustment of the Contractor's Fee for changes in the Work:

« »

§ 4.3.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

« »

§ 4.3.5 Rental rates for Contractor-owned equipment shall not exceed « » percent (« » %) of the standard rental rate paid at the place of the Project.

§ 4.3.6 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.3.7 The Contractor shall prepare and submit to the Construction Manager, within 14 days of executing this Agreement, a written Control Estimate for the Owner's review and approval. The Control Estimate shall include the items in Section B.1 of Exhibit B, Determination of the Cost of the Work.

§ 4.4 Cost of the Work Plus Contractor's Fee with a Guaranteed Maximum Price

§ 4.4.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.4.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

« »

§ 4.4.3 The method of adjustment of the Contractor's Fee for changes in the Work:

« »

§ 4.4.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

<< >>

§ 4.4.5 Rental rates for Contractor-owned equipment shall not exceed << >> percent (<< >> %) of the standard rental rate paid at the place of the Project.

§ 4.4.6 Unit Prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.4.7 Guaranteed Maximum Price

§ 4.4.7.1 The Contract Sum is guaranteed by the Contractor not to exceed << >> (\$ << >>), subject to additions and deductions by Change Order as provided in the Contract Documents. This maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.

§ 4.4.7.2 Alternates

§ 4.4.7.2.1 Alternates, if any, included in the Guaranteed Maximum Price:

Item	Price

§ 4.4.7.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.4.7.3 Allowances, if any, included in the Guaranteed Maximum Price:

(Identify each allowance.)

Item	Price

§ 4.4.7.4 Assumptions, if any, upon which the Guaranteed Maximum Price is based:

(Identify each assumption.)

<< >>

§ 4.4.8 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.

§ 4.4.9 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in Section 4.4.7.4. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions contained in Section 4.4.7.4 and the revised Contract Documents.

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any, to be assessed in accordance with Section 3.4.)

<< >>

§ 4.6 Other:

(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and Certificates for Payment issued by the Construction Manager and Architect, the Owner shall make progress payments on account of the Contract Sum, to the Contractor, as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Construction Manager receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

§ 5.1.4.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

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

§ 5.1.4.3 In accordance with AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price

§ 5.1.5.1 With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit B, Determination of the Cost of the Work, along with payrolls, petty cash accounts, receipted invoices, or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor, plus payrolls for the period covered by the present Application for Payment, less that portion of the payments attributable to the Contractor's Fee.

§ 5.1.5.2 Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

§ 5.1.5.3 In accordance with AIA Document A232-2019 and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

- .1 The Cost of the Work as described in Exhibit B, Determination of the Cost of the Work;
- .2 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and
- .3 The Contractor's Fee computed upon the Cost of the Work described in the preceding Section 5.1.5.3.1.1 at the rate stated in Section 4.3.2; or if the Contractor's Fee is stated as a fixed sum in Section 4.3.2 an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work included in Section 5.1.5.3.1.1 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232-2019;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232-2019;
- .5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.5.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and
- .6 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5.4 The Owner, Construction Manager and Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.5.5 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor, and such action shall not be deemed to be a representation that (1) the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; (2) that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

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

§ 5.1.5.7 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price

§ 5.1.6.1 With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Contractor's Fee.

§ 5.1.6.2 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Contractor's Fee.

§ 5.1.6.2.1 The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.6.2.2 The allocation of the Guaranteed Maximum Price under this Section 5.1.6.2 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.

§ 5.1.6.2.3 When the Contractor allocates costs from a contingency to another line item in the schedule of values, the Contractor shall submit supporting documentation to the Architect and Construction Manager.

§ 5.1.6.3 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work and for which the Contractor has made payment or intends to make payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 5.1.6.4 In accordance with AIA Document A232-2019, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

- .1 That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;
- .2 That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing;
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and
- .4 The Contractor's Fee, computed upon the Cost of the Work described in the preceding Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 at the rate stated in Section 4.4.2 or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232-2019;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019;
- .5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner’s auditors in such documentation; and
- .6 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.6.5 The Owner and the Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.6.6 In taking action on the Contractor’s Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and such action shall not be deemed to be a representation that (1) the Construction Manager or Architect have made a detailed examination, audit, or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; (2) that the Construction Manager or Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner’s auditors acting in the sole interest of the Owner.

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

§ 5.1.6.8 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to when the Work of this Contract is substantially complete, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« »

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

« »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to when the entire Work of this Contract is substantially complete, including modifications for completion of portions of the Work as provided in Section 3.4.2, insert provisions for such modifications.)

« »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, when the Work of this Contract is substantially complete, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted when the Work of this Contract is substantially complete shall not include retainage as follows:

(Insert any other conditions for release of retainage when the Work of this Contract is substantially complete, or upon Substantial Completion of the Work of all Contractors on the Project or portions thereof.)

« »

§ 5.2 Final Payment

§ 5.2.1 Final Payment Where the Contract Sum is Based on a Stipulated Sum

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

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect.

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

<< >>

§ 5.2.2 Final Payment Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

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

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment;
- .2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit B, Determination of the Cost of the Work and a final Application for Payment; and
- .3 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect in accordance with Exhibit B, Determination of the Cost of the Work.

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

<< >>

§ 5.3 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

<< >> % << >>

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A232–2019, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

<< >>

<< >>

<< >>

<< >>

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A232–2019, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

[☐] Arbitration pursuant to Article 15 of AIA Document A232–2019.

[☒] Litigation in a court of competent jurisdiction.

[« »] Other: *(Specify)*

« »

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

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.1.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

« »

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019.

§ 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 7.2.1 Termination

§ 7.2.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.2.1.2 Termination by the Owner for Cause

§ 7.2.1.2.1 If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232–2019, the Owner shall then only pay the Contractor an amount as follows:

- .1 Take the Cost of the Work incurred by the Contractor to the date of termination;
- .2 Add the Contractor’s Fee, computed upon the Cost of the Work to the date of termination at the rate stated in Section 4.3.2 or 4.4.2, as applicable, or, if the Contractor’s Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A232–2019.

§ 7.2.1.2.2 When the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, if the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232–2019, the amount, if any, to be paid to the Contractor under Article 14 of AIA Document A232–2019 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.1.2.1.

§ 7.2.1.2.3 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders. All Subcontracts, purchase orders and rental agreements entered into by the Contractor will contain provisions allowing for assignment to the Owner as described above.

§ 7.2.1.3 Termination by the Owner for Convenience

If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of or method for determining the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

« »

§ 7.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019; in such case, the Contract Sum and Contract Time shall be increased as provided in Article 14 of AIA Document A232–2019, except that the term “profit” shall be understood to mean the Contractor’s Fee as described in Section 4.3.2 or 4.4.2, as applicable, of this Agreement.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2019 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:

(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

§ 8.3 The Contractor’s representative:

(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

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

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A132™–2019, Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A232–2019, may be given in accordance with a building information modeling exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with a building information modeling exhibit, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Relationship of the Parties

Where the Contract is based on the Cost of the Work plus the Contractor's Fee, with or without a Guaranteed Maximum Price, the Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

§ 8.8 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition
- .2 AIA Document A132™–2019, Exhibit A, Insurance and Bonds Exhibit
- .3 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition
- .4 Building Information Modeling Exhibit, if completed:

« »

- .5 Drawings

Number	Title	Date

- .6 Specifications

Section	Title	Date	Pages

- .7 Addenda, if any:

Number	Date	Pages

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

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

[« »] AIA Document A132™–2019, Exhibit B, Determination of the Cost of the Work

[« »] AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, dated as indicated below:
(Insert the date of the E235-2019 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages

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

Document	Title	Date	Pages

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A232–2019 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor’s bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« »

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

OWNER (Signature)

« »« »

(Printed name and title)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

DRAFT AIA® Document A132® – 2019

Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the « » day of « » in the year « »
(In words, indicate day, month, and year.)

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

« »
« »
« »

THE OWNER:
(Name, legal status, and address)

« »« »
« »

THE CONTRACTOR:
(Name, legal status, and address)

« »« »
« »

TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A232™–2019, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

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

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

This document is intended to be used in conjunction with AIA Document A232™–2019, General Conditions of the Contract for Construction. Article 11 of A232™–2019 contains additional insurance provisions

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§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 **Causes of Loss.** The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit

§ A.2.3.1.2 **Specific Required Coverages.** The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to false work and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's, Construction Manager's, and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 **Deductibles and Self-Insured Retentions.** If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 **Occupancy or Use Prior to Substantial Completion.** The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- [☐] **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.

☐ ☐

- [☐] **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

☐ ☐

- [☐] **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

☐ ☐

- [☐] **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

☐ ☐

- [☐] **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

☐ ☐

- [☐] **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

☐ ☐

- [☐] **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

☐ ☐

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

- [☐] **§ A.2.5.1 Cyber Security Insurance** for loss to the Owner due to data security and privacy breach,

including costs of investigating a potential or actual breach of confidential or private information.
(Indicate applicable limits of coverage or other conditions in the fill point below.)

« »

[« »] § A.2.5.2 Other Insurance

(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 **Certificates of Insurance.** The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 **Deductibles and Self-Insured Retentions.** The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 **Additional Insured Obligations.** To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect and the Architect's consultants, and the Construction Manager and the Construction Manager's consultants, as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, and the Construction Manager and the Construction Manager's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

« »

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than «One Million Dollars» (\$ «1,000,000») each occurrence, «Two Million Dollars» (\$ «2,000,000») general aggregate, and «Two Million Dollars» (\$ «2,000,000») aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and

.5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than «One Million Dollars» (\$ «1,000,000») per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than «Five Hundred Thousand Dollars» (\$ «500,000») each accident, «Five Hundred Thousand Dollars» (\$ «500,000») each employee, and «Five Hundred Thousand Dollars» (\$ «500,000») policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than «One Million Dollars» (\$ «1,000,000») per claim and «Two Million Dollars» (\$ «2,000,000») in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

«Umbrella Liability or Excess Liability – Five Million Dollars (\$5,000,000.00) each occurrence. Five Million Dollars (\$5,000,000.00) aggregate »

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

[« »] § A.3.3.2.1 If there is only one Contractor performing the Work on the Project, property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:

(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

« »

[« »] § A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for Work within fifty (50) feet of railroad property.

[« »] § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[« »] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

[« »] § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

[« »] § A.3.3.2.6 Other Insurance

(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:

(Specify type and penal sum of bonds.)

Type	Penal Sum (\$0.00)
Payment Bond	«100% »
Performance Bond	«100% »

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

«Maintenance Bond in the amount of 10% for 18 Months »

SECTION 006119 - MAINTENANCE BOND

MAINTENANCE BOND

The "Maintenance Bond", (not included herein) shall be utilized for this project. The Term of this Bond commences on the date of final completion under the Construction Contract and continues for a period of eighteen (18) months, notwithstanding a longer warranty period set forth in the Construction Contract.

An original copy of this document will be presented to the bidder for execution upon notification. Reference the Instructions to Bidders for the execution of this document.

END OF DOCUMENT

**Upper Pottsgrove Township
New Municipal Complex**

18 MONTH MAINTENANCE BOND

(Please type or print clearly)

BOND # _____

(Renew each term with Maintenance Contract)

Know all men by these presents, that we, the undersigned _____ as principal and _____ as sureties, are hereby held and firmly bound unto the Upper Pottsgrove Township, as Obligee, in the penal sum of _____ dollars, (10% of Contract Amount) for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed this _____ day of _____, 20__ .

The condition of the above obligation is such that whereas, the above named principal did on the _____ day of _____, 20__ , enter into a contract with _____, which said contract is made a part of this the bond the same as though set forth herein:

Now, if said _____ shall well and faithfully do and perform the things agreed by _____ to be done and performed according to the terms of said contract, and shall pay all lawful claims for subcontractors, materialmen, laborers, persons, firms or corporations for labor performed or materials, provisions, provender or other supplies or teams, fuels, oils, implements or machinery furnished, used or consumed in the carrying forward, performing or completing said contract, we agreeing and assenting that this undertaking shall be for the benefit of any subcontractor, materialmen, laborer, person, firm or corporation having a just claim, as well as for the Obligee herein; and shall continue said obligation for eighteen months from the date of completion and acceptance of the work to be performed under the said contract to guarantee against defects in the work, which, in the judgment of the Obligee or its successors or assigns having jurisdiction in the premises, are caused by defective or inferior materials and/or workmanship, then this obligation shall be void; otherwise the same shall remain in liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the said contract or in or to the plans or specifications therefore shall in anywise affect the obligation of said surety on its bond.

The Principal and the Surety agree that in case of default in and/or any action arising out of this Bond, the Obligee or any person, association, partnership and/or corporation who shall be entitled to institute and maintain an action upon this Bond, as above provided, may use, for the purpose of the establishment of the claim, a copy of this Bond, duly certified by the Obligee to be true and correct, and the Principal and the Surety agree that any action instituted upon any part of this Bond shall not be a bar to any subsequent action upon the same part or any other part of this Bond.

Each reference in this Bond to the Obligee shall also include the officers, employees and representatives of said Obligee.

It is the intention of the parties hereto to be legally bound by this instrument.

IN WITNESS WHEREOF, THE said Principal and Surety have duly executed this Bond in triplicate under seal and day and year first above written.

SIGNED, SEALED AND DATED THIS _____ DAY OF _____, 20_ .

PRINCIPAL

Attest: BY _____ (L.S.)

Title of Officer

SECRETARY (SEAL)

Surety

Attest: BY _____ (L.S.)

Title of Officer

SECRETARY (SEAL)

SECTION 00.6216 – CERTIFICATE OF INSURANCE

The CERTIFICATE OF INSURANCE shall be in effect for the duration of this project.

ADDITIONAL INSURED SHALL BE LISTED AS:

UPPER POTTS GROVE TOWNSHIP
1409 Farmington Avenue
Pottstown, PA 19464

END OF DOCUMENT 00 6216



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:		
	PHONE (A/C, No, Ext):	FAX (A/C, No):	
INSURED	E-MAIL ADDRESS:		
	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A :		
	INSURER B :		
	INSURER C :		
	INSURER D :		
INSURER E :			
INSURER F :			

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	\$
	☐ COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$
	☐ CLAIMS-MADE ☐ OCCUR						MED EXP (Any one person)	\$
							PERSONAL & ADV INJURY	\$
							GENERAL AGGREGATE	\$
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	\$
	☐ POLICY ☐ PRO-JECT ☐ LOC							\$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	\$
	☐ ANY AUTO						BODILY INJURY (Per person)	\$
	☐ ALL OWNED AUTOS						BODILY INJURY (Per accident)	\$
	☐ HIRED AUTOS						PROPERTY DAMAGE (Per accident)	\$
								\$
	UMBRELLA LIAB						EACH OCCURRENCE	\$
	☐ EXCESS LIAB						AGGREGATE	\$
	☐ DED ☐ RETENTION \$							\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						WC STATUTORY LIMITS	OTHER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	Y / N	N / A				E.L. EACH ACCIDENT	\$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	\$
							E.L. DISEASE - POLICY LIMIT	\$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

SECTION 007216 – GENERAL CONDITIONS

The “General Conditions of the Contract for Construction, Construction Manager as Advisor”, AIA Document A232-2019 has been modified for this project and shall be in effect for the duration of this project. These General Conditions are attached as part of this section. The Index section does not reflect the changes therefore, Contractors should read the entire document.

END OF DOCUMENT

DRAFT AIA® Document A232® – 2019

General Conditions of the Contract for Construction, Construction Manager as Adviser Edition

for the following PROJECT:

(Name, and location or address)

<< >>
<< >>

THE CONSTRUCTION MANAGER:

(Name, legal status, and address)

<< >><< >>
<< >>

THE OWNER:

(Name, legal status, and address)

<< >><< >>
<< >>

THE ARCHITECT:

(Name, legal status, and address)

<< >><< >>
<< >>

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

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

This document is intended to be used in conjunction with AIA Documents A132™-2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™-2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™-2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their 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 other Contractors, and by the Owner's own forces and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities, other than the Contractor or Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

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

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

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

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

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

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

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

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

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

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

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work, and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

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

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

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

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit.

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

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 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. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

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

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.8 The Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect, and the Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 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. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. Unless the Architect or the Construction Manager objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

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

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed 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 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

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

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

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

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect and Construction

Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may submit a Claim as provided in Article 15.

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

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 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.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the

Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Construction Manager, Architect, and Owner, and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 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 that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.10 through 4.2.12. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors.

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

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

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's 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 Construction Manager and Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

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

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

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

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 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. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner, Separate Contractors, or of other Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner, Separate Contractors, or by other Contractors except with written consent of the Construction Manager, Owner, and such other Contractors or Separate Contractors. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Separate Contractors, other Contractors, or the Owner, its 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 and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and 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), but only to the extent caused by the 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 that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 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 Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 The Construction Manager is the person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.

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

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with other Contractors shall be through the Construction Manager. Communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are other Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.11 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 in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect 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 Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or 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.

§ 4.2.13 The Construction Manager will prepare Change Orders and Construction Change Directives.

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of the Construction Manager, Owner, or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.19 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.

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

§ 4.2.21 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. 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 other Contractors or Separate Contractors or the subcontractors of other Contractors or Separate Contractors.

§ 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, the Contractor, as soon as practicable after award of the Contract, shall notify the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period 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, Construction Manager 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, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other 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 with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Owner shall provide for coordination of such forces and Separate Contractors with the Work of the Contractor, who shall cooperate with them.

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

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, Construction Manager and other 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's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces, Separate Contractors, or other Contractors.

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

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

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, 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, Construction Manager, Architect and Contractor. A Construction Change Directive requires agreement by the Owner, Construction Manager 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. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

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

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

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 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 Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

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

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager 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.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement 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.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and 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.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

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

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

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.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

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

§ 8.2 Progress and Completion

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

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

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

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended 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 Article 15.

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 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 the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

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

§ 9.4 Certificates for Payment

§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 Where there is more than one Contractor performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives all of the Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Contractor's application with information from similar applications for progress payments from the other Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 9.4.2.1 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Project Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Project Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

§ 9.4.3 The Construction Manager's certification of an Application for Payment or, in the case of more than one Contractor, a Project Application and Certificate for Payment, shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The Architect's issuance of a Certificate for Payment or, in the case of more than one Contractor, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 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 correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.6 The issuance of a Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.3 and 9.4.4 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor or other Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

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

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

§ 9.5.4 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment or Project 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 Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Construction Manager 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 Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

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

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

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

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

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

§ 9.7 Failure of Payment

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's 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 Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner, Construction Manager 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 shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof 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 notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of

Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of 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 and authorized by public authorities having jurisdiction over the Project. 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 and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, 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 completion of the Work, the Contractor shall forward to the Construction Manager a notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (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, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a

lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

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

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

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

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 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, a Subcontractor, or a Sub-subcontractor;
- .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; and
- .4 construction or operations by the Owner, Separate Contractors, or other Contractors.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 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 Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

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

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

§ 10.2.8 Injury or Damage to Person or Property

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

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect of the condition.

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

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their 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 or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

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

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

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

§ 11.2 Owner's Insurance

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

§ 11.2.2 **Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform both the Contractor and the Construction Manager, separately and in writing, prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors,

and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice directly to the Contractor, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub-subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor, Architect, and Construction Manager for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate

agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their examination 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 that the Construction Manager or Architect has not specifically requested to examine prior to its being covered, the Construction Manager or 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, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, 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 Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Construction Manager, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. 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 Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Construction Manager and 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 Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.4.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

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

§ 13.5 Interest

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

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 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the

Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, 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 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. 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.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 **Definition.** A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract 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. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 **Claims for Additional Cost.** If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 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.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.7 **Waiver of Claims for Consequential Damages.** The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days of receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to

be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

SECTION 007300 – SUPPLEMENTARY CONDITIONS

1.1 COORDINATION WITH THE GENERAL CONDITIONS

The following supplements modify, change, delete from or add to the General Conditions of the Contract for Construction, AIA Document A232-2009 (Construction Manager as Advisor). Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

1.2 MODIFICATIONS OF ARTICLE 1 – GENERAL PROVISIONS

1.1.1 The Contract Documents

DELETE last sentence of this Subparagraph and ADD new Clause, as follows:

1.1.1.1 The Contract Documents also consists of other Documents such as Bidding Requirements (Advertisement or Invitation to Bid, Instructions to Bidders, Sample Forms, portions of Addenda relating to Bidding Requirements, Form of Proposal, Bid Bond, Contractors Qualification Statement, Performance Bond, Payment Bond, Maintenance Bond, as well as accepted Alternates, if any), and modifications issued after execution of the Contract.

ADD the following subparagraph to Article 1.1.3:

Where compliance with two (2) or more standards, products, details or methods of work are specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirements.

1.1.5 The Drawings

ADD the following Clauses under Paragraph 1.1.5:

1.1.5.1 On the Drawings, given dimensions shall take precedence over scaled measurements, and large scale drawings, details and plans over small scale drawings.

1.1.5.2 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure for the approval of the Architect.

1.1.6 The Specifications

ADD the following at the end of Subparagraph 1.1.6:

“, and are the technical portion of the Project Manual.”

1.1.7 Instruments of Service

ADD the following Clause under Paragraph 1.1.7:

1.1.7.1 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.

1.1.8 Initial Decision Maker

ADD the following at the end of Subparagraph 1.1.8:

“The Architect shall serve as the Initial Decision Maker.” ADD new

Subparagraph as follows:

1.1.9 Enumeration of the Drawings, Specifications and Addenda

The Drawings and Specifications which form a part of this Contract are enumerated in the List of Drawings in the Drawing Set and the Table of Contents of the Project Manual. The addenda which form a part of this Contract are referenced in the Owner-Contractor Agreement.

1.2 Correlation and Intent of the Contract Documents ADD

new Clauses, as follow:

1.2.1.1 Should the Drawings, Schedules or Specifications or any other Contract Documents disagree in themselves or between or among themselves, the better quality or greater quantity of Work or materials shall be estimated upon and, unless otherwise directed in writing by the Architect, shall be performed and provided.

1.2.1.2 In the case of an ambiguity, inconsistency, and/or conflict between or among the Drawings, Schedules, Specifications, and any other Contract Documents within any of them not clarified by Addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation.

ADD new Subparagraph, as follows:

1.2.4 Sections of Division 01 - General Requirements govern the execution of the Work of other Sections of the Specifications.

1.4 Interpretation

ADD new Subparagraph, as follows:

1.4.2 For brevity, certain phrases in the Contract Documents, unless specifically stated as an obligation of the Owner, are understood to be an obligation of the Contractor. Where phrases such as “as selected”, “as directed”, or “as approved” are used, the following phrase “by the Owner”, or “the Architect / Engineer acting for the Owner” is understood. Where phrases such as “or equal”, or “approved equal”, are used, the following phrase “as determined by the Owner, or Architect / Engineer acting for the Owner” is understood.

1.5 Ownership and Use of Architect's Drawings, Specifications and Other Instruments of Service

1.5.1 ADD the following at the beginning of the Subparagraph: “Unless otherwise set forth in the Agreement between the Owner and the Architect,”

1.2 MODIFICATIONS OF ARTICLE 2 – OWNER

2.1 General

ADD new Clause, as follows:

2.1.1.1 The term Owner in every case shall be the Upper Pottsgrove Township.

2.1.2 DELETE Subparagraph in its entirety.

2.2 Information and Services Required of the Owner

2.2.1 DELETE Subparagraph in its entirety.

2.2.2 REVISE the Subparagraph to read as follows: Except for fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments, inspections and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. The Plumbing, Mechanical, Electrical and General Building Permits, as required by the Township, shall be paid by the Owner. The applications for those permits are the responsibility of appropriate Contractors. All other permits, as may be required for the performance of Work are the responsibility of appropriate Contractors. The Owner shall pay for all Contractor permits and inspections by government agencies.

2.2.3 ADD the following at the end of the first sentence of Subparagraph 2.2.3:

“If readily available or accessible to the Owner and requested by the Contractor.”

2.2.3 DELETE the last sentence of Subparagraph 2.2.3:

2.2.3 ADD the following Clause under paragraph 2.2.3:

2.2.3.1 The Owner’s Representative, Architect, Construction Manager, and or, Owner do not assume any responsibility for the content and accuracy of any surveys, utility information, subsurface reports and other information provided through their office, by others, to the Contractor. The Contractor is responsible to obtain any additional information that is required in this regard for the performance of the work.

2.2.5 DELETE and add the following Subparagraph 2.2.5:

The Contractor will be NOT be furnished any prints. All printing of documents is the responsibility of the Contractor.

ADD the following Clause under Subparagraph 2.2.5:

2.2.5.1 The Architect is not obligated to provide “electronic versions,” of the Contract Documents to the Contractor.

2.3 Owner’s Right to Stop the Work

2.3 DELETE the word “repeatedly”.

2.4 Owner's Right to Carry Out the Work

2.4.1 DELETE Paragraph 2.4 and ADD the following Paragraphs:

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, to supply a sufficient number of skilled employees, or to execute the Work with sufficient promptness and diligence to achieve completion within the time herein provided, and further fails within a three (3) day period after receipt of written notice from the Owner and/or Construction Manager to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, after such three (3) day period and without prejudice to other remedies it has available to it under the Contract Documents or at law, correct such deficiencies. In such case, a Construction Change Directive per Article 7 shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including the Owner's expenses and compensation for the Construction Manager and Architect's additional services made necessary by such default. If payments then or thereafter due the Contractor are insufficient to cover such amounts, the Contractor shall pay the difference to the Owner upon demand.

2.4.2 Upon a declaration of default of the Contractor the Owner shall have the authority, in the manner prescribed by law, to contract for the completion of the work or such part thereof, or to place such and so many persons as they may deem advisable by contract, or call on Surety to complete the work or otherwise to work at and to complete the work or part thereof, or so much of the work or part thereof, as the Owner may direct or may place under contract, and take possession of and use any or all plant, tools, appliances, equipment, supplies, property, and materials as they may find upon the site of the work, and procure or cause to be procured, by contract or otherwise, all plant, tools, appliances, equipment, supplies, property, and materials for the completion of the same, and charge the whole expense of the completion of the work, or part thereof, to the Contractor or its Surety.

2.4.3 The Owner may, without terminating the Contract, require by written demand of the Surety, that the Surety meet with the Owner and the Contractor as necessary to assist in either resolving the failures of the Contractor or in achieving a smooth transition to a replacement Contractor if the Owner asserts its right to carry out the Work under Section 2.4.1 and/or to terminate the Contract in accordance with Article 14. The Surety shall discharge its obligation to the Owner under this Section in good faith, for the purpose of assisting the Owner in the timely and orderly completion of the Work.

2.4.4 If the Contractor at any time refuses or neglects to supply a sufficient number of skilled employees, or, in the opinion of the Owner as advised by the Construction Manager, in its sole discretion, fails in any respect to execute the Work with sufficient promptness and diligence to achieve its completion within the time herein provided, then the Owner through the Construction Manager by itself or through another Contractor may, after two (2) calendar days written notice to the Contractor either delivered personally or mailed to or left at Contractors place of business, furnish any such labor and material or both, in whole or in part, and offset the cost thereof and expenses therefore against any payments due or to become due to the Contractor under this

Contract. Furthermore, Contractor shall be liable for any excess cost of completion of Work, terminated or performed by the Construction Manager or other Contractors in whole or in part, and in this event

shall be entitled to no further compensation whatsoever after a complete termination of Contractor's unperformed portion of this Contract. The Contractor, upon the receipt of notice of partial termination of this Contract, shall promptly notify the union or unions having jurisdiction over the Work of its employees that it releases the Project insofar as terminated and consents to the Work being done by others, and Contractor expressly authorizes the Construction Manager to notify the union or unions of such release and consent in the name of Contractor. The failure or refusal of Contractor to issue such release and consent, or disclaimer by Contractor of the effectiveness of the release issued by the Construction Manager shall subject Contractor to any and all damages sustained by the Owner as a direct or consequential result of such failure.

ADD new Paragraph and Subparagraphs as follows:

2.5 Owners' Representative (CM)

2.5.1 The Owner's Representative shall have the same access to the Work as provided to the Owner. He shall be consulted by the Contractor's Superintendent on all matters pertaining to the Work and shall transmit all instructions of the Architect regarding the Work to the Contractor's Superintendent.

2.5.2 The Owner's Representative will assist the Contractor's Superintendent in obtaining additional information in explanation of the Contract Documents and will serve as liaison between the Contractor's Superintendent and the Architect. The Owner's Representative shall have no duty or responsibility with regard to the Contractor's means and methods, coordination, or safety procedures for the Worksite.

ADD new Paragraph and Subparagraphs as follows:

2.6 Owners' Right to Implement Extraordinary measures

2.6.1 In the event the Owner determines that the performance of the Work has not progressed or reached the level of completion required by the Contract Documents, the Owner shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation, (i) working additional shifts or overtime, (ii) supplying additional manpower, equipment, and facilities, and (iii) other similar measures (hereinafter referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures shall continue until the progress of the Work complies with the stage of completion required by the Contract Documents. The Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the construction schedule.

2.6.2 The Contractor shall not be entitled to an adjustment in the Contract Sum in connection with Extraordinary Measures required by the Owner."

2.6.3 The Owner may exercise the rights furnished the Owner under or pursuant to this Subparagraph as frequently as the Owner deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date or completion date set forth in the Contract Documents

1.3 MODIFICATIONS OF ARTICLE 3 – CONTRACTOR

3.1 General

ADD the following Clause under Subparagraph 3.1.1:

3.1.1.1 Where the term "Contractor" is modified in any way, such as, without limit, "ME Contractor", "Plumbing Contractor", "Electrical Contractor", the modified term shall be deemed to refer to the trade involved with the work mentioned, but such meaning does not relieve the Contractor (as defined in Subparagraph 3.1.1) from its responsibility for all Work, whether or not such Work is sublet.

3.1.4 In the second line after the word "Architect" insert "or the Owner's Representative(CM)".

3.2 Review of Contract Documents and Field Conditions by Contractor

3.2.1 In the second line DELETE the word "generally". ADD the

following at the end of Subparagraph 3.2.1:

Prior to the execution of the Agreement, the contractor and each subcontractor evaluated and satisfied themselves as to the conditions and limitations under which the Work is to be performed, including without limitation, (i) the location, condition, layout, and nature of the Project site and surrounding areas, (ii) generally prevailing climatic conditions, (iii) anticipated labor supply and costs, (iv) availability and cost of materials, tools and equipment, and (v) other similar issues. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the Project site. Except as set forth in Paragraph 10.3, the Contractor shall be solely responsible for providing a safe place for the performance of the work. The Owner shall not be required to make any adjustments in either the Contract Sum or the Contract Time in connection with any failure by the Contractor or any subcontractor to have complied with the requirements of this subparagraph 3.2.1.

ADD new Clauses, as follows:

3.2.1.1 After reporting to the Architect any error, inconsistency or omission he may discover in the Contract Documents, the Contractor shall not proceed with any work so affected without the Architect's written decision and approval.

3.2.1.2 Typographical and spelling errors will be interpreted by the Architect for their intended meaning.

ADD new Subparagraphs, as follow:

3.2.5 The Contractor shall notify the Architect and Construction Manager in writing of any ambiguities, defects, or inaccuracies between the Contract, Plans and Specifications, or between any Contract Documents and the actual scope and nature of the Work, including but not limited to ambiguities, defects, or inaccuracies that affect the Contractor's bid price. The failure by the Contractor to notify the Architect and Construction Manager in writing of the ambiguities, defects or inaccuracies shall result in all such ambiguities, defects or inaccuracies being strictly construed against the Contractor in favor of the Owner, and the Contractor shall be required to perform the Work necessary to complete this Contract with such ambiguities, defects, or inaccuracies so resolved, and in accordance with the actual scope and nature of the Work, without any extra charge. Quantities given in the Contract, Plans and

Specifications, if any, are estimates only and, if and when indicated in this Contract, the Contractor shall abide by the final measurements as made by the Owner as basis for final payment. In any event, the Contractor shall provide quantities necessary to perform the Work in a manner satisfactory to the Owner.

3.2.6 Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify measurements at the Project site and shall be responsible for the correctness of such measurements. No extra charge or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference which may be found shall be submitted to the Architect for resolution before proceeding with the Work.

3.3 Supervision and Construction Procedures

ADD new Clause to Subparagraph 3.3.1, as follows:

3.3.1.1 With input from all Contractors at regularly scheduled coordination meetings, the Construction Manager will coordinate the activities of the Contractors in accordance with the latest approved Project Construction Milestone Schedule. The Contractors will abide by the coordination decisions of the Construction Manager. Disputes between Contractors regarding the scheduling of the Work and/or any conflicts arising therefrom, shall be resolved by the Construction Manager, whose decision shall be final, and whose decision shall not give rise to any claim for any increase to either the Contract Sum or the Contract Time. Failure by a Contractor to attend a regularly scheduled coordination meeting, or to follow the directions of the Construction Manager regarding the coordination of the Work, shall be considered a material breach of contract.

ADD new Subparagraphs, as follows:

3.3.4 The Contractor shall coordinate its construction activities with the Owner, The CM, the Contractor's subcontractors and other entities involved assuring efficient and orderly installation of each part of the Work. The Contractor shall coordinate its operations with operations included under different Sections of the specifications that depend on each other for proper installation, connection, and operation.

3.3.5 The Contractor shall be responsible for all field measurements and layouts for the work of this Contract from reference points established by others, including verification of existing conditions prior to the commencement of shop fabrication or field installation.

3.3.6 The Contractor shall be responsible for the daily monitoring of its work for quality assurance compliance and shall immediately correct any conditions found to be unacceptable and not conforming with the quality level established by the Architect, Owner or Owner Representative (CM).

3.3.7 The Contractor shall inspect portions of the Project related to the Contractor's Work in order to determine that such portions are in proper condition to receive subsequent Work.

3.4 Labor and Materials

ADD new Subparagraphs, as follow:

3.4.4 Not later than 15 calendar days from the Contract Date, the Contractor shall provide a list showing the name of the manufacturer proposed to be used for each of the products identified in the Specifications and, where applicable, the name of the installing Subcontractor. All labor and materials provided pursuant to the terms of this Contract shall be the best of their respective kinds, and the Contractor shall provide, at its own expense, all tools, scaffolding, hoisting, facilities for materials, implements, cartage, Shop Drawings, other submittals, tests, molds, photographs, models, guarantees, Samples, and permits necessary for the due and proper performance of this Contract and pay all inspection fees, royalties, permits, taxes, and license fees.

3.4.5 The Construction Manager will promptly reply in writing to the Contractor stating whether the Owner, the Construction Manager, or the Architect, after due investigation, has reasonable objection to any such proposed manufacturer or subcontractor in 3.4.4 above. If adequate data on any proposed manufacturer or installer is not available, the Architect may state that action will be deferred until the Contractor provides further data. Failure to object to a manufacturer shall not constitute a waiver of any of the requirements of the Contract Documents, and all products furnished by the listed manufacturer must conform to such requirements.

ADD new Clauses, as follow:

3.4.5.1 After the Contract has been executed, the Owner, the Architect and the Construction Manager will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the General Requirements of the Specifications (Division 01).

3.4.5.2 By making requests for substitutions based on Clause 3.4.4.1 above, the Contractor:

- (a) represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified.
- (b) represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified.
- (c) certifies that the cost data presented is complete and includes all related costs under this Contract including costs under separate contracts, and includes the Architect's redesign costs and the Construction Manager's related costs; and waives all claims for additional costs related to the substitution which subsequently become apparent; and will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
- (d) any costs that result from a Contractor attempting to receive approval of a substitution shall be borne entirely by the Contractor.
- (e) any delays that arise as a result of an approved substitution, all additional costs including, but not limited to, overtime and costs incurred by other trades to satisfy a recovery schedule, shall be borne by that Contractor.

ADD new Subparagraph, as follows:

3.4.6 No materials which have been delivered on the Project site to form part of the Work shall be removed there from without the consent of the Construction Manager, excepting only such surplus material as may remain after completion of the Work.

3.5 Warranty

ADD new Subparagraph, as follows:

3.5.1 The Contractor agrees to assign to the Owner at the time of final completion of the Work any and all manufacturers' warranties relating to materials and labor used in the Work, and further agrees to perform the Work in such manner so as to preserve any and all such manufacturers' warranties.

3.6 Taxes

ADD new Subparagraphs, as follows:

3.6.1 The Contractor shall pay all sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor, including taxes enacted but not yet in effect as of the date of the bid opening.

3.6.2 The Contractor shall be familiar with applicable exemptions and exclusions (collectively referred to hereinafter as "exemptions") from sales and use taxes for the Work and/or any component thereof under applicable Pennsylvania law.

3.6.3 The Contractor acknowledges and confirms its understanding that under 72 P.S. §7204(57) (and the relevant regulations issued by the Pennsylvania Department of Revenue and the case law interpreting the statute and regulations), the sale at retail to or use by a construction contractor of building machinery and equipment (as defined in the applicable statutes and regulations) and services thereto that are transferred to a political subdivision, such as the Owner, are exempt from sales and use tax and agrees: (a) that it has not and will not include in the Contract Sum any sales or use tax on exempt items; (b) to refund to the Owner, or to permit the Owner to deduct from the Contract Sum, any sales or use tax paid by the Contractor on exempt items; (c) to maintain records separately identifying the items of material and/or equipment on which any such tax was paid and the amounts of each such tax payment; and (d) to afford the Owner and/or its representatives the opportunity to inspect and photocopy any of the Contractor's books and records evidencing the payment of any tax described in paragraph 3.6.1 in connection with the Project, at the Owner's cost and expense. The Contractor agrees to include this provision in each of its subcontracts executed and issued in connection with the Project.

3.6.4 The Contractor agrees that the Owner will be damaged in an amount that cannot be easily calculated if the Contractor fails or refuses to give the Owner access to the Contractor's records as required in this Article 3.6. Should the Contractor fail or refuse to allow the Owner access to records as required herein, the Contractor shall pay to the Owner as liquidated damages and not as a penalty a sum equal to 1% of the Contract Sum.

3.6.5 In the event that it is determined that Contractor or its Subcontractors has paid sales and/or use tax on an otherwise tax exempt item, the Owner may elect to seek a refund from the Pennsylvania Department of Revenue, or any other applicable taxing jurisdiction, in lieu of the remedy afforded to it pursuant to paragraph 3.6.3(b) of this Article. The Contractor on its own behalf, and on behalf of all of its subcontractors and material suppliers, shall be deemed to have assigned to the Owner any and all rights to seek a refund of any and all sales and/or use taxes paid. The Contractor and its Subcontractors will cooperate in completing any proof of assignment, supply copies of purchase orders and invoices, and provide proof of payments necessary to secure the applicable sales and/or use tax refund requested from the Pennsylvania Department of Revenue or any other taxing jurisdictions.

3.7 Permits, Fees, Notices and Compliance with Laws

3.7.1

ADD at the end of Subparagraph 3.7.1, add the following sentence, " Owner shall pay for other permits and inspections by government agencies."

ADD new Clauses to Subparagraph to 3.7.2:

3.7.2.1 The Contractor shall comply with all construction regulations and codes of the State where the Project resides and any of its amendments as they are made official.

3.7.2.2 Any standard, code, guide, regulation, or specification referred to in the Contract Documents shall refer to the latest edition or amendment thereto of said standard, etc., as of the date of the Contract, except where a specific edition is noted.

3.7.3 In the second line delete the word "appropriate" and substitute the word "full." ADD

new Clause to Subparagraph 3.7.3:

3.7.3.1 Prior to application for final payment, the Contractor shall furnish a written certification that the Work conforms to applicable laws, ordinances, rules, regulations and lawful orders.

ADD the following Subparagraph:

3.7.6 The Contractor is responsible for the scheduling and coordination of any inspections covered by local Code enforcement officials or agencies for their work. The Owner Representative (CM) is to be notified in writing of all scheduled inspections when they are ordered. The Contractor must further ensure that the work to be inspected is properly completed and ready for inspection and that all equipment necessary to conduct the inspection (i.e. gauges, meters, etc.) is in place and in proper working order.

3.8 Allowances

DELETE Paragraph, along with its Subparagraphs, in its entirety. Contractor shall refer, instead, to Specification Section 01 21 00 "Allowances" as it occurs regarding allowances for the Project.

3.9 Superintendent

ADD the following Subparagraph:

3.9.4 The Contractor's superintendent will at all times be subject to the approval of the Owner (or CM). The Owner (or CM) reserves the right to require the Contractor to replace the Superintendent at no additional cost to the Owner, if in the opinion of the Owner (or CM), the Superintendent is not performing satisfactorily.

3.10 Contractor's Construction Schedule

Subparagraph 3.10.1; In the third line, insert the words "Milestone Schedule in the" before the word "Contract".

Subparagraph 3.10.3; In the last line, insert "Milestone" before the word "Schedule".

REVISE Subparagraph to read as follows:

3.10.4 The Contractor shall conform to the most recent Project Milestone Schedule, as prepared by the Construction Manager.

ADD new Subparagraphs (and Clause), as follow:

3.10.5 The Contractor shall proceed with the Work, and every part and detail thereof, in a prompt and diligent manner, and to facilitate the performance thereof. The representative of the Contractor shall take instructions directly from the field supervisor and/or other authorized persons designated by the Construction Manager. The Contractor shall do the phases of the Work at such times and in such times and in such order or sequence as the Construction Manager may from time to time direct. The Contractor shall adhere to the Project Milestone Schedule or other schedules of the Work as such schedules may be established and modified by the Construction Manager, in its sole discretion, at any time, and from time to time. In the event the Project is divided into additional sections or phases, the Contractor shall prosecute, if required by the Construction Manager, all sections or phases simultaneously, and wholly finish the Work according to the Drawings, Specifications, and this Contract, in such time as not to delay the other trades and to insure completion of the Project within the time fixed herein. Progress schedules may from time to time be modified to conform to acceleration, delays, suspension or variances from schedules, and Contractor shall conform its progress to the modified schedule without additional compensation. The Contractor may be required to complete its Work as directed by the Construction Manager prior to the date for Substantial/Final Completion to allow other Contractors to perform timely so that all Contractors shall achieve Substantial/Final Completion by the date set forth in the Project Schedule. The Contractor shall, at no additional cost to Owner, work overtime, Saturdays and Sundays, at the direction of the Construction Manager or the Owner if, in the sole discretion of the Construction Manager or Owner, such overtime and Saturday and Sunday work is necessary due to delays of the Contractor. The Contractor agrees that if it shall delay the progress of the Work so as to cause any damage for which the Owner will become liable, it shall reimburse the Owner for any such damages, all-inclusive. The consent or permission of the Construction Manager to the delayed finishing of the Work shall not relieve the Contractor from liability to the Owner for any damages resulting from such delayed performance, including but not limited to liquidated damages under the provisions of the Contract Documents.

3.10.6 The Contractor shall proceed with each item of Work as soon as it becomes available in a coordinated effort with the Construction Manager and other Contractors to complete the Project ahead of the current up-to-date Project Schedule.

3.10.7 In the event several items or areas of Work are available at the same time, the Contractor shall proceed on each item or in each area as soon as it becomes available.

3.10.8 If the Owner (or CM) directs the Contractor to reduce the duration of its Work items by working overtime, the Contractor shall submit a Change Order request within three (3) days for the extra that will be incurred and show just cause for said increase. The Owner shall only be responsible for the premium portion of said overtime.

3.10.9 The Contractor shall be responsible for all costs incurred by the Owner that are a result of not completing its Work items within the duration shown on the Project Milestone Schedule, including but not limited to the additional costs for overtime submitted by other Contractors to meet the recovery schedule.

3.10.10 In the event that a Contractor is being delayed for any reason, the Contractor shall notify the Architect, Construction Manager and the Owner in writing within three (3) working days of the start of the

delay.

3.10.11 The Contractor shall participate in regularly scheduled coordination meetings with the Construction Manager and other Contractors. The Contractor shall provide a list of the predecessors for each of its Work items in order to coordinate its Work with the other contractors. If a Contractor refuses to participate, the Contractor shall be in material breach of contract, and the Owner may elect to proceed with termination of the Contract.

3.12 Shop Drawings, Product Data and Samples

ADD the following at the end of Subparagraph 3.12.5:

Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Construction Manager or Architect without action.

ADD new Clauses, as follow:

3.12.5.1 Within 15 days after receipt of executed copy of Contract, the Contractor shall submit to the Construction Manager & Architect for review, a comprehensive Shop Drawings Submission Schedule of all Shop Drawings required for the Project. The purpose of this procedure is to expedite this phase of the Work with maximum efficiency so as not to delay the Contractor's Construction Schedule.

3.12.5.2 The following submittal schedule will be mandatory; time is from date of the notice to proceed, in consecutive calendar days.

All Contracts and Trades: 30 days

3.12.6.1 Failure of the Contractor to note their approval on the Shop Drawings or Product Data or approving without checking will be reason for the Architect to return such submission to the Contractor. The Architect reserves the right to reject outright, without checking in detail, any Shop Drawings that indicate complete lack of study of the Contract Documents, requiring that they be completely redrawn. Wherever markings of Architect occur, transfer them to original tracing, resubmit new sepia print for recheck; repeat this process until final review. When finally reviewed, the Contractor shall make up blueprints and distribute to all parties concerned, such as Owner, Architect, Consultant of Architect, Construction Manager, Contractor and Subcontractors doing work that will be affected by the particular Shop Drawings.

3.12.6.2 If the Shop Drawings show variations from the Contract requirements because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in their letter of transmittal in order that, if accepted, suitable action may be taken for proper adjustment in the Contract. Otherwise, the Contractor will not be relieved of the responsibility for executing the Work in complete conformity with the Contract even though the Shop Drawings or Product Data have been reviewed.

3.12.10 In the seventh line after the words "The Architect will specify" delete the word "all". In the 14th line after the words "specified to the Contractor" delete the word "all".

3.13 Use of Site

ADD the following Subparagraphs:

3.13.3 Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work shall be free from all debris, building materials, and equipment. Without limitation of any other provision of the Contract Documents, Contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of any areas in buildings adjacent to the site of the Work or within the Work site itself, in the event of partial occupancy.

3.13.4 When the conditions and activity on the site results in it being necessary (as is the case of this project), the Contractor shall be responsible for procuring an offsite location for the purpose of material storage and employee parking, and such price shall be included in the Base Bid Price.. In addition to complying with all local traffic and parking ordinances, the Contractor will not be permitted to stage material deliveries on the streets in the area of the Project site or otherwise impact the residential or commercial activities of all surrounding public and private entities.

3.13.5 The Contractor shall restore streets, drives, curbs, sidewalks, utilities, and other existing conditions that where disturbed by construction operations to a condition equal to their condition prior to the commencement of the work.

3.13.6 The Contractor, their subcontractors, vendors, etc. shall not erect any sign on the Project site without the prior written consent of the Owner. This consent may be withheld at the sole discretion of the Owner.

3.13.7 Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor, as area is available. All precast product shall be stored offsite and transported to the site.

3.13.8 Contractor shall ensure that ALL THE RULES AND REGULATIONS are followed by every employee, sub-contractor, sub-subcontractor, and all personnel working on, or visiting the site, including, but not limited to; No Smoking, No Tobacco products use, No alcohol, and No illegal drugs or drug use. Any Contractor found in violation of these rules and regulations will be considered in breach of contract.

3.14 Cutting and Patching of Work

ADD new Clause, as follows:

3.14.2.1 Each Contractor shall protect all existing Work and shall be responsible for all costs to restore any cut or damaged Work to its original condition and warranty, without cost to the Architect, Construction Manager and Owner.

ADD the following Subparagraph:

3.14.3 The Contractor shall be responsible for all fire safing and fire stopping work relative to the work of their Contract and shall complete all such work in a timely manner so as not to delay or damage the work of subsequent trades and other Contractors.

3.15 Cleaning Up

ADD new Clauses to Subparagraph 3.15.1:

3.15.1.1 The Contractor shall clean and provide maintenance on completed construction, after installation, as frequently as necessary through the remainder of the construction period.

3.15.1.2 The Contractor shall supervise its construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

ADD the following Subparagraphs:

3.15.3 The Contractor shall, on a daily basis, clean debris resulting from the Work and protect all construction in progress, and provide protective covering where required to assure protection from damage or deterioration until Substantial Completion.

3.15.3.1 Clean up shall commence within 24 hours of receipt of written notice from the Construction Manager, or subparagraph 3.15.2 will be enforced.

3.15.4 The Contractor shall remove all surplus material, false work, temporary structures, including foundations thereof, plant of any description, and debris of every nature resulting from its operations and to put the site in a neat orderly condition prior to Substantial Completion.

3.15.5 The Contractor shall restore all areas which have been used for storage of materials and equipment, and all areas which have been disturbed by its operations to their original conditions, or to a condition satisfactory to and approved by the Owner, including but not limited to all site pavement and or, grassed areas.

3.18 Indemnification

Subparagraph 3.18.1; In the second line, insert "Owner's consultants" after the words "Architect's consultants".

3.18.2 REVISE Subparagraph to read as follows: The Contractor and each Subcontractor, of whatever tier, hereby certifies to the that it complies with all employment related laws and regulations governing employment or collective bargaining agreements, if any. Nothing in this Agreement shall be construed as divesting any Contractor or Subcontractor of its sole and exclusive right to control the means, manner or method of performance of the Work of any Contractor or their employees. Nothing in this Agreement shall be construed in a manner that would be violative of the legal or contractual rights of any employee. The Contractor, and each Subcontractor, regardless of tier, shall defend, hold harmless and indemnify the Owner and Boyle Construction, Inc., with respect to any claims, losses, expenses, costs, and reasonable attorneys' fees incurred by the Owner and Boyle Construction, Inc., with regard to the undersigned's failure to comply with these Bid Documents and procedures. This provision shall be accorded the broadest meaning permitted by law.

Add the following Subparagraphs:

3.18.3 The Contractor's indemnity obligations under this Paragraph 3.18 shall also specifically include, without limitation, all fines, penalties, damages, liability, costs, expenses (including, without limitation, reasonable attorneys' fees), and punitive damages (if any) arising out of, or in connection with, any (i)

violation of or failure to comply with any law, statute, ordinance, rule, regulation, code, or requirement of a public authority having jurisdiction over the Work, by the Contractor, a Subcontractor, or any person or entity for whom either is responsible; (ii) means, methods, procedures, techniques, or sequences of execution or performance of the Work; and/or

(iii) failure to secure and pay for permits, fees, approvals, licenses, and inspections as required under the Contract Documents.

3.18.4 The Contractor shall indemnify and hold harmless all of the Indemnities from and against any costs and expenses (including reasonable attorneys' fees) incurred by any of the Indemnities in enforcing any of the Contractor's defense, indemnity, and hold-harmless obligations under this Contract.

1.4 MODIFICATIONS TO ARTICLE 4 – ARCHITECT AND CONSTRUCTION MANAGER

4.1 General

ADD the following at the end of Subparagraph 4.1.1:

The term "Architect" shall mean Desman Associates, 9 West 37th Street, 5th Floor, New York, New York 10018. The term "Architect" means the Architect or the Architect's authorized representative.

ADD the following at the end of Subparagraph 4.1.2:

The term "Construction Manager" shall mean Boyle Construction, Inc., 1209 Hausman Road, Suite B, Allentown, PA. 18104.

4.2 Administration of the Contract

DELETE 4.2.4 and REPLACE with the following:

4.2.4 The Construction Manager will work with all Prime Contractors in coordinating the activities of the Contractor and other Multiple Prime Contractors in accordance with the latest approved Project Milestone Schedule.

DELETE 4.2.9 and REPLACE with the following:

4.2.9 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data and Samples. Where there are Multiple Prime Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from Contractor and other Multiple Prime Contractors, and transmit to the

Architect those recommended for approval. Construction Manager will review and submit Shop Drawings, Product Data, Samples, and similar submittals to the Owner and Architect for review and approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

Subparagraph 4.2.17; In the first line, insert "Contractor's" before the word "performance".

DELETE 4.2.20 and REPLACE with the following:

4.2.20 Requests For Information

4.2.20.1 In the event the contractor or its subcontractor determines that some portion of the drawings, specifications, or other contract documents requires *clarification or interpretation* by the Owner, the contractor shall submit a Request For Information in writing to the Construction Manager. The Construction Manager shall forward each request for information to the Architect, with the Construction Manager's recommendation if required. Requests for information may only be submitted by the Contractor and shall only be submitted on the Request For Information form provided by The Architect or Construction Manager. The Contractor shall clearly and concisely set forth the issue for which the clarification or interpretation is sought and why a response is needed from the Owner. In the Request For Information, the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

4.2.20.2 The Architect will review all Requests for Information to determine whether they are Requests for Information with the meaning of this term. If the Architect determines that the document is not a Request for Information, it will be returned to the Contractor, un-reviewed as to content, for re-submittal on the proper form and in the proper manner, with correspondence copied to the Construction Manager.

4.2.20.3 The Construction Manager's recommendation and the Architect's responses to Requests For Information shall be issued within (5) five working days of receipt of the request from the Contractor unless the Architect determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner, the Architect will within (5) five working days of the receipt of the request, will notify the Contractor of the anticipated response time. If the Contractor submits a Request For Information on an activity with (5) five working days or less of float time on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Owner to respond to the request provided that the Owner responds within the (5) five working days set forth above.

4.2.20.4 Responses from the Architect will not change any requirement in the Contract Documents. In the event the Contractor believes that a response to a Request For Information will cause a change to the requirements of the Contract Document, the Contractor shall immediately give written notice to the Owner stating that the Contractor considers the response to be a Change Order. Failure to give such written notice immediately shall waive the Contractor's right to seek additional time or cost under the

Changes article of these General Conditions.

1.5 MODIFICATIONS TO ARTICLE 5 – SUBCONTRACTORS

5.2 Award of Subcontracts and Other Contracts for Portion of the Work

DELETE Subparagraph 5.2.1 in its entirety and REPLACE with the following:

5.2.1 Within 14 days after Notice to Proceed, the Contractor shall furnish to the Construction Manager in writing, for review by the Owner, Construction Manager and the Architect, a list of the names of all Subcontractors, Sub-subcontractors, fabricators, manufacturers, sources of supply, articles, devices, fixtures, pieces of equipment, materials and processes proposed for each item of Work on List of Subcontractors, AIA Document G805. The Construction Manager will promptly notify the Contractor, in writing, if the Owner, Construction Manager or the Architect, after due investigation, has reasonable objection to any names on such list. Failure of the Owner, Construction Manager and Architect to make objection promptly to any name on the list shall constitute acceptance of such name.

5.2.1.1 In submitting the names of subcontractors, the Contractor shall list 1) the extent of limitations of the trades or work included by specifications paragraph number, 2) the name and address of the Subcontractor, 3) the name and address of all Sub-subcontractors for each significant subdivision of the trade or work, and if required by the Architect, 4) reference in the form of a list of at least five (5) jobs similar in size and quality to this Project performed in the last five (5) years, with name, location of work, dollar value and names of the Owner and Architect.

DELETE Subparagraph 5.2.3 in its entirety and REPLACE with the following:

5.2.3 If the Owner, Construction Manager or Architect has objection to a person or entity proposed by the Contractor, the contractor shall propose another whom the Owner, Construction manager or Architect, has no objection to. The Contract Sum shall not be increased by any difference due to any costs associated by such change.

ADD new Subparagraph, as follows:

5.2.5 The Contractor shall provide at the Project site, and in its shops and those of its suppliers and Subcontractors, an opportunity for the Owner, the Construction Manager, the Architect and/or Engineer, at any time and from time to time, to inspect the quality and quantity of materials and work in process, and shall ensure that such facilities are safe for such inspections.

5.4.3 Delete the last sentence of the paragraph.

1.6 MODIFICATIONS TO 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 MODIFY the Subparagraph as follows:

ADD a period after the words; "Conditions of the Contract". DELETE the remainder of the paragraph.

6.2 Mutual Responsibility

DELETE subparagraph 6.2.3 in its entirety and REPLACE with the following:

6.2.3 The Contractor shall reimburse the Owner for any costs the Owner incurs because of the

Contractor's delays, improperly timed activities or defective construction.

ADD new Subparagraphs, as follow:

6.2.6 Each Contractor shall cooperate with all other Contractors in forwarding the interest of the Owner, and shall coordinate with their Work with that of all other Contractors under the general direction of the Construction Manager, who shall be in charge of the progress of the Project and all divisions and subdivisions thereof.

6.2.7 Any conflict in or between the Drawings and Specifications as to which of the separate Contractors are to perform specific Work shall be resolved by the Construction Manager (after consultation with the Architect), whose decisions shall be final and binding.

6.3 Owner's Right to Clean Up

ADD new Clause to Subparagraph 6.3.1:

6.3.1.1 Costs to be deducted from each Contractor through Change Order, or Construction Change Directive.

1.7 **MODIFICATIONS TO ARTICLE 7 – CHANGES IN THE WORK**

7.1 General

ADD new Subparagraph, as follows:

7.1.4 Where Work is required to be done and the parties cannot agree as to whether such Work is extra Work or as to valuation by reason of any modification as herein provided, then the performance of such Work shall not be delayed, and the Contractor shall immediately proceed with the Work upon the written order of the Owner or designated representative. The failure of the Contractor to proceed as herein provided shall constitute a material breach of this Contract, regardless of whether or not the Contractor is correct in its contentions, it being understood that the progress of the Work may not be delayed by any controversy between the Owner and the Contractor.

7.2 Change Orders

ADD new Subparagraph, as follows:

7.2.1 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including but not limited to all direct and indirect costs associated with such change, any impact such change may have on the unchanged Work, and any and all adjustments to the Contract Sum and the Project Construction Schedule. In the event a Change Order increases the Contract Sum, the Contractor shall include the Work covered by such Change Orders in Applications for Payment as if such Work were originally part of the Contract Documents.

7.3 Construction Change Directives

DELETE the first sentence in Subparagraph 7.3.7 and REPLACE with the following:

If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager, in consultation with the Architect, shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an allowance for overhead and profit in accordance with the schedule set forth in Subparagraph 7.3.11 below.

ADD new Subparagraph and Clauses, as follow:

7.3.11 The allowance for overhead and profit combined, included in the total cost to the Owner, shall be based on the following Clauses:

7.3.11.1 For the Prime Contractor, for any Work performed by the Contractor's own forces, ten (10%) percent of the cost.

7.3.11.2 For the Prime Contractor, for Work performed by the Prime Contractor's Subcontractor, five (5%) percent of the amount due the Subcontractor.

7.3.11.3 For each Subcontractor or Sub-subcontractor involved, for any Work performed by that Subcontractor's own forces, ten (10%) percent of the cost.

7.3.11.4 Overhead and Profit shall include the following;

- a. Home office expenses.
- b. Field office expenses.
- c. Supervision.
- d. Project management and estimation.
- e. Small tools and equipment.
- f. Labor & Material Payment and Performance Bond.
- g. Insurance.
- h. Shipping and delivery.
- i. Taxes.

7.3.11.5 In order to facilitate checking or quotations for credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over one-thousand (\$1,000.00) dollars be approved without such itemization.

7.3.11.6 When a change in the Work includes categories of work both added to and deleted from the Contract, the total quantities of added work and of deleted work shall be determined separately for each category and the appropriate unit price or net cost of the Work shall be applied to the difference between the two total quantities.

7.3.11.7 Unit Prices shall be inclusive of all costs (including overhead and profit) and shall be applied to units of measures as set forth in the form of proposal for each category of the Work.

7.4 Minor Changes in the Work ADD

new Subparagraph, as follows:

7.4.1 During the progress of the Work, the Architect/Construction Manager may request proposals for changes in the Work. Contractor shall respond to Architect/Construction Manager's request within ten (10) days. Failure to respond to a request for proposal within this time shall be considered cause for withholding progress payments otherwise due under the Contract.

7.5 Substitutions

ADD new Subparagraphs, as follows:

7.5.1 All costs of incorporating changes in the Contractor's Work, including reviews of substitution requests and services rendered by the Construction Manager, Architect or Sub-consultants in connection with same shall be borne by the Contractor.

7.5.2 Wherever in the drawings and specifications any item of equipment or material is designated by reference to a particular brand, manufacturer, or trade name, it is understood that an approved equal product, acceptable to the Architect, may be substituted by the Contractor subject to the limitations set forth herein below. Determination of equality shall be based upon, but not limited to, the following consideration: suitability for the purpose intended, economy of operation and maintenance, aesthetics and related items. Final decision of acceptability of the equipment or material proposed shall rest with the Architect.

7.5.3 As a prerequisite for obtaining acceptance of substitute products after execution of the Contract, the Contractor must submit the following information to the Architect/Construction Manager in writing (See Division 01 Section, "Product Substitutions"):

7.5.4 If, in the opinion of the Architect, the test data submitted for a substitute product is insufficient for judging its quality or suitability, the Owner reserves the right to require testing of such product by a laboratory of its own choosing. The Contractor shall bear all costs of testing substitute products.

7.5.5 When substitute equipment or material requires redesign of structures, supports, partitions, piping, wiring, or ductwork, i.e. "work", shown on the contract drawings, such redesign, revised drawings and details shall be prepared by the Contractor at its own expense. All costs of incorporating such changes in its work and in the work of other Contractors as well as the cost of services rendered by the Architect and/or Sub-consultants in connection with same shall be borne by the Contractor.

1.8 MODIFICATIONS TO ARTICLE 8 – TIME

8.1 Definitions

ADD new Clause to subparagraph 8.1.3:

8.1.3.1 Substantial Completion of the Work shall be accomplished within the period of consecutive calendar days (or by the date), as stated in the Agreement, plus any authorized extension(s) of time as approved by written agreement.

8.1.3.2 Substantial Completion is further defined as receipt by the Owner of a Certificate of Occupancy or Certificate of Final Approval by the local agency and whereby the Owner may assume beneficial occupancy or use.

8.2 Progress and Completion ADD

new Clause, as follows:

8.2.3.1 If the Contractor fails to adhere to the Project Milestone Schedule, it shall be responsible for all additional costs incurred during implementation of a Recovery Schedule, including, but not limited to, acceleration costs.

ADD new Subparagraphs, as follows:

8.2.4 The Contractor shall not cause any unnecessary delay to other Contractors at the Project site and shall bear the cost of all damages done to such other Contractors as a consequence of its untimeliness.

8.2.5 The Contractor hereby agrees that if the Work is not Substantially Complete by the date set forth in the Contract, the Owner reserves the right to withhold payment from the Contractor for the Construction Manager's and Architect's additional services. Payment for the Architect's additional services shall be documented with the issuance of a Construction Change Directive.

8.3 Delays and Extensions of Time

DELETE Subparagraph 8.3.1 in its entirety and REPLACE with the following:

8.3.1 If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Owner, or by any employee, or by any 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 any causes beyond the Contractor's control, or by delay authorized by the Owner, or by any cause which the owner determines may justify the delay, then the Contract time shall be extended by change order for such reasonable time as the Owner may determine, but the Owner shall not be liable to the Contractor for any damages resulting from the delay, and extension of time shall be the exclusive remedy.

ADD new Clause, as follows:

8.3.1.1 Owner, Architect and Construction Manager shall not be liable to Contractor or any Subcontractor for claims or damages of a monetary or any other nature caused by or arising out of delays contemplated or not contemplated at the signing of the Contract. The sole remedy against the Owner for delays shall be the allowance to claimant of additional time for completion of the Work, whether or not those delays were caused by the interference of the Owner, any of the Owner's consultants, another Contractor, or restricted access to the Project site.

DELETE 8.3.2 in its' entirety and Replace with new Subparagraph, as follows:

8.3.2 Claims for extension of time shall be made in writing to the Architect, Construction Manager and the Owner no more than 72 hours after the beginning of the occurrence of the delay, otherwise they shall be waived.

DELETE Subparagraph 8.3.3 in its entirety and REPLACE with the following:

8.3.3 Notwithstanding anything to the contrary in the Contract Documents, an extension in the Contract

Time, to the extent permitted under subparagraph 8.3.1, shall be the sole remedy of the Contractor for any (i) delay in the commencement, prosecution, or completion of the Work, (ii) hindrance or obstruction in the performance of the Work, (iii) loss of productivity, or (iv) other similar claims (collectively referred to in this subparagraph 8.3.3 as "Delays"), whether or not such Delays are foreseeable, or caused by acts of the Owner. In no event shall the Contractor be entitled to any compensation or recovery of any damages, in connection with any Delays, including, without limitation, consequential damages, lost opportunity costs, impact damages, or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference with the Contractor's performance of the Work.

ADD new Subparagraphs, as follows:

8.3.4 The provisions of this Article shall not be interpreted or construed to preclude or prevent the Contractor from making and prosecuting any claim against any separate Contractor engaged or employed by the Owner for damages alleged to have been caused or occasioned by any such separate Contractor. The Owner shall not be made a party to any such proceeding.

8.3.5 The Owner may suspend the whole or any part of the work, if it shall deem it for the best interest of the Owner to do so, without compensation to the Contractor for such suspension other than extending the time for completion of the work as much as it may have been delayed by such suspension. During such suspension, all materials delivered upon but not placed in the work, shall be neatly piled by the Contractor so as not to obstruct public travel or shall be removed from the line of work at the direction of the Owner and, unless the materials be moved by the Contractor upon such direction, the materials shall be removed by the Owner and expense thereof will be charged to the Contractor.

ADD new Paragraph and Subparagraphs, as follows:

8.4 Completion And Liquidated Damages

8.4.1 The Contractor shall substantially complete all of its Work included in the Contract Documents ready for the Owner's occupancy as defined in the General Conditions, in accordance with the allotted time indicated in Division 01, Section "Time of Completion" (Project Milestone Schedule), and on the Contractor's Form of Proposal, subject to extensions of contract time as provided in the General Conditions.

8.4.2 The Contractor shall fully complete all of its Work included in the Contract Documents as defined in the General Conditions, in accordance with the allotted time indicated in Division 01, Section "Time of Completion" (Project Milestone Schedule), and on the Contractor's Form of Proposal, of notice to proceed, subject to extensions of contract time as provided in the General Conditions.

8.4.3 Should the Contractor fail to complete fully and in conformity with all provisions of the Contract within the Contract Time and the milestones set forth in The Contract, the Contractor shall and hereby agrees to pay the Owner the sum indicated in the Contract for each consecutive calendar day beyond the number of days allowed by the Contract, which sum is agreed upon as reasonable and proper measure of damages which the Owner will sustain per diem by failure of Contractor to complete work within time as stipulated; it being recognized by Owner and Contractor that the injury to Owner which could

result from a failure of the Contractor to complete on schedule is uncertain and cannot be computed exactly. In no way shall costs of Liquidated Damages be construed as a penalty.

8.4.4 It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the Contract of the work to be done there under are essential conditions of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall be commenced on or before a date to be specified in the Owner's written notice to commence the work.

8.4.5 The Contractor agrees that the Work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of all work described in the Contract Documents is a reasonable time for the completion of same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

1.9 MODIFICATIONS TO ARTICLE 9 – PAYMENTS AND COMPLETION

9.3 Applications for Payment

ADD new Clauses to Subparagraph 9.3.1, as follows:

9.3.1.3 To ensure satisfactory completion of the Work under the Contract Documents, the Owner shall withhold a retainage from each progress payment. In the event there is a specific cause for greater withholding, retainage may be assessed on the balance of the Work, or may be increased as necessary to protect the Owner's interest as the Owner shall determine in its sole discretion. In the event a dispute arises between the Owner and the Contractor, which dispute is based upon increased costs claimed by the Contractor occasioned by delays or other actions of another Prime Contractor, 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 Owner to indemnify such Owner against the claim. However, all such monies retained by the Owner may be withheld from the Contractor until Substantial Completion of the Contract.

(a) Refer to Division 01 Section "Applications for Payment" for withholding amounts as well as additional directives.

9.3.2.1 Payments for stored materials and equipment, whether stored on or off the site, are not the obligation of the Owner and are the obligation of the Contractor. Payments for such stored material and equipment may be made electively and purely upon the discretion of the Owner, and on the advice of the Construction Manager.

ADD new Subparagraph, as follows:

9.3.4 Each Application for Payment shall be accompanied by the following, all in form and substance satisfactory to the Owner: (i) a current Contractor's lien waiver and duly executed and acknowledged sworn statement showing all Subcontractors and material suppliers with whom the Contractor has entered

into subcontracts, the amount of each such subcontract, the amount requested for any Subcontractor and material supplier in the requested progress payment, and the amount to be paid to the Contractor from such progress payment, together with similar sworn statements from all such Subcontractors and material suppliers; (ii) duly executed waivers of mechanics' and material suppliers' liens from all Subcontractors and, when appropriate, from material suppliers and lower tier Subcontractors establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or persons in any previous Application for Payment; and (iii) all information and materials required to comply with the requirements of the Contract Documents or reasonably requested by the Owner or the Architect.

9.5 Decisions to Withhold Certification

9.5.1.7 Delete the word, "repeatedly". ADD

new Clauses to Subparagraph 9.5.1:

9.5.1.8 Avoidable delay in the progress of the Work.

9.5.1.9 Deliberate delay in the submission for approval of names of subcontractors, materialmen, sources of supply, shop drawings and samples.

9.5.1.10 Failure of the Contractor to maintain scheduled progress or meet intermediate milestones.

9.5.1.11 Failure to submit certified payroll records covering previous payment periods, or otherwise fail to comply with the State's Prevailing Wage Act.

9.5.1.12 Where Work performed has not been performed in the manner required under the Contract Documents and the Construction Manager or Architect require additional time to determine if the Work will perform as required by the Contract Documents.

9.5.1.13 Failure to submit waivers of Claims from all subcontractors as well as relevant entities for the previous period.

9.5.1.14 Failure of the Contractor to submit revised schedule updates.

9.5.1.15 Failure to comply with Owner's Project Safety Requirements, or other special conditions of the Owner, when applicable under the Contract Documents.

9.5.3 At the beginning of the paragraph, DELETE 'If the Architect or Construction manager withholds certification for payment under section 9.5.1'. At the end of this paragraph, ADD the following: "In no event shall any joint payment be construed as conveying any rights to any subcontractor or supplier from the Owner."

9.6 Progress Payments

9.6.2 REVISE Subparagraph to read as follows: The Contractor shall pay each Subcontractor within 20 days of the receipt of payment from the Owner, an amount equal to the percentage of completion allowed to the Contractor on account of such Subcontractor's work, less the percentage retained

from payments to the Contractor. The Contractor shall also require each Subcontractor to make similar payments to its Subcontractors.

9.7 Failure of Payment:

9.7.1 In the third line of the first sentence, replace the word 'seven' with the word 'thirty'. In the fifth line of the first sentence, replace the word 'seven' with the word 'twenty-one'.

ADD new Subparagraph, as follows:

9.7.2 If the Owner is entitled to any reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner, or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

9.8 Substantial Completion:

ADD the following to the end of Subparagraph 9.8.1:

provided, however, that a condition precedent to Substantial Completion shall be the Owner's receipt of all certificates of occupancy and any other permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the occupancy of the project.

9.9 Partial Occupancy or Use: ADD

new Subparagraphs, as follow:

9.9.4 When prior occupancy or use of completed portions is requested by the Owner, the Architect will make a prior occupancy inspection to establish the conditions of the Work at time of occupancy. Use of occupancy by the Owner prior to final acceptance does not relieve the Contractor of their responsibility to maintain all insurance and bonds required of the Contractor during the life of the Contract. The Contractor shall not be held responsible for any damage to the occupied part of the Project resulting from the Owner's occupancy. Occupancy by the Owner shall not be deemed to constitute a waiver of existing claims in behalf of the Owner or Contractor against each other.

9.9.5 The Owner reserves the right to locate and install items of equipment within the Building(s). Such work shall not unreasonably interfere with the progress of the Contractors, and shall not include the connection of such equipment to its power source, except for testing. Such installation shall not be deemed an acceptance of the Work in those areas by the Owner.

1.10 MODIFICATIONS TO ARTICLE 10 – PROTECTION OF PERSONS AND PROPERTY

10.1 Safety Precautions and Programs:

ADD new Subparagraph, as follow:

10.1.2 The Contractor is required to establish, maintain, and implement effective programs to ensure

compliance with all OSHA regulations, in addition to the Hazard Communication Standard, and advise the Owner Representative regarding the location, on site, where the Contractor's MSDSs are kept. The Contractor will provide the Owner Representative (CM) with all information regarding any precautionary measures that the Contractor must employ to protect employees, any foreseeable emergency situations, and the Contractor's labeling system used at the work site. The Contractor is also required to provide this information to the Owner and other entities operating at the site, and to secure similar information from the other entities operating at the site, for the protection of all employees.

10.2.5 Add the following subparagraphs:

10.2.5.1 The Contractor shall at all times safely guard and protect the property from damage or loss. He shall safely guard and protect his own work and adjacent property from damage, loss or injury to the satisfaction of the Owner.

10.2.5.2 The Contractor shall at all times absolutely prevent water from entering the completed portions of the building as a result of his work or as a result of damage to the building caused by him.

10.2.5.3 During the progress of construction, and during suspension of work for any reason and during inclement weather, and at any other time the Architect shall direct, the Contractor shall protect his materials and work against damage and injury from weather or other causes. If, in the opinion of the Construction Manager, any materials or work shall have been damaged or injured by reason or failure on the part of the Contractor to protect his work, such materials and work shall be removed and replaced at the expense of the Contractor.

10.2.5.4 In case any direct or indirect injury is done to existing conditions or work in consequence of any act or omission on the part of the Contractor, his employees, or agents, the Contractor at his own cost and expense shall restore such structures, property, materials, etc., to a condition equal or similar to that existing before such damage or injury was done by repairing, rebuilding, or replacing, as may be required by the Architect.

10.2.5.5 The Contractor shall check weather forecast daily and shall take every precaution to minimize danger from wind and weather, to persons, to the work and equipment, and to the interior of the building.

10.2.5.6 If the Contractor shall claim compensation for any damage sustained by reason of the acts of the Owner or its agents, he shall, within seven days after sustaining of such damage, make a written claim and statement to the Architect of the nature of damage sustained. On or before the fifteenth day of the month sustained, the Contractor shall file with the Architect an itemized statement of the details and the amount of such damage alleged to have been sustained and unless such statement is made as thus required, his claim for compensation will not be considered by the Owner.

10.2.5.7 In addition to the foregoing statements, the Contractor shall, upon notice from the Owner, produce for examination by the representatives of the Owner, all his books of accounts, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and canceled checks, showing all of his acts and transactions in connection with or relating to or arising by reason of this Contract, and submit himself and persons in his employ for examination under oath by any person designated by the Owner to investigate claims made against the Owner. Unless the aforesaid statements shall be made and filed within the time aforesaid and the aforesaid records submitted for examination, and the Contractor and his employees submit themselves for examination as aforesaid, the Owner shall be released from all claims arising under, relating to or by reason of this Contract, except for the sums certified by the Owner to be due under the provisions of this Contract.

10.2.6 Add the following subparagraphs:

10.2.6.1 The Contractor shall immediately report all accidents, injuries, or health hazards to the Owner, or his designated representative, in writing. This shall not obviate any mandatory reporting under the provisions of the Occupational Safety and Health Administration Act.

10.2.6.2 The Contractor shall comply with the Department of Labor Safety and Health regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54), or subsequent amendments to such regulations.

10.2.8 Add the following paragraph and subparagraphs:

The following additional safety and security measures shall apply:

10.2.8.1 Safety on the site shall be the sole responsibility of the Contractor.

10.2.8.2 All dumpsters and Contractor equipment and storage shall be located within the construction fence.

10.2.8.3 The use of televisions, AM/FM radios and all other forms of recorded music on the site is prohibited.

10.2.8.4 The Owner reserves the right to issue all employees of the Contractor and all subcontractors of the Contractor a photo identification or temporary badge which must be worn at all times. The Construction Manager shall keep a log of all badges issued.

10.2.8.5 Employees/Subcontractors of the Contractor shall:

10.2.8.5.1 Confine their movement to the Contract limits of the Work..

10.2.8.5.2 Park within designated areas if onsite parking is permitted; otherwise, Contractors must obtain and pay for offsite parking.

10.2.8.5.3 Wear ID/Temporary badges at all times, if issued.

10.2.8.5.4 Work during designated hours.

10.2.8.5.5 Follow Employer's safety procedures.

10.2.8.5.6 Not enter the building, if a Certificate or Temporary Certificate of Occupancy has been issued or outside the construction area without an escort authorized by the Owner, if said escort is required by the Owner.

10.2.8.5.7 Not use products which generate odors during building occupancy hours, if a Certificate or Temporary Certificate of Occupancy has been issued.

10.2.8.5.8 Upon notice to proceed, Contractor shall supply Owner a copy of his safety manual.

10.2.8.5.9 The Contractor shall:

10.2.8.5.9.1 Conduct an orientation session for all employees, subcontractors and other persons that it admits to the work site. This session shall include a thorough review of these general safety guidelines.

10.2.8.5.9.2 Conduct a special safety meeting when job conditions change, abnormal working conditions exist or work is being done in a new area to assure that adequate precautions are taken.

10.2.8.5.9.3 Contact the Owner's representative regarding any changing conditions that could affect

the safe performance of the work.

10.2.8.5.9.4 Shall never raise or swing loads over people or over occupied buildings.

10.2.9 This project is subject to all of the Safety and Health Regulations as promulgated by the U.S. Department of Labor and applicable Pennsylvania State Regulations, whichever is more stringent. Contractors are urged to make themselves familiar with the requirements of these regulations.

10.2.10 The Contractor shall keep ready for immediate use, all articles necessary for giving "First Aid to the Injured." He shall also have standing arrangements for the immediate removal and hospital treatment of any employees or persons who may be injured on or about the work.

10.2.11 In the event the Contractor does not comply with all applicable laws and regulations as outlined above, then the Contractor waives any and all protections and/or immunities under the Workers Compensation Act.

10.2.12 The General Contractor shall remove snow or ice from the site, as required to provide safe access to the work.

10.2.13: The General Contractor is responsible for maintaining the fenced construction area for the duration of the project including the fence, dumpsters, general trash removal, and maintaining all grass and landscaping, and shall return the same to the original undisturbed condition. Each Contractor shall be responsible for the daily debris and trash cleanup of their work. Any Contractor in violation, shall be considered in breach of contract, and the Construction Manager will facilitate removal of debris and back-charge the violating party accordingly.

10.4 Emergencies:

ADD new Subparagraph, as follow:

10.4.2 The Contractor must provide, with their executed Contract Agreement, a list of home telephone numbers for those personnel who would be contacted in the event of any emergency at the project during non-business working hours.

Add the following:

10.5 Work In Streets, Highways, and Roads

10.5.1 The Contractor shall obtain from the proper authorities, permission to open any State, County or Municipal street, highway or road. The Contractor shall file with the Architect/Construction Manager, and with the agencies having jurisdiction, triplicate copies of sketches and descriptions showing the exact location and size of the opening or excavation, the time during which it is proposed to make such opening or excavation, and the proposed method of maintaining traffic during construction. The Contractor shall not make any such opening or excavation until written permission (permit) has been granted by the agencies having jurisdiction and the Architect. If such agencies require inspection, traffic control, signaling or other work to be done by its own forces, the Contractor shall arrange for and pay for the same.

10.5.2 The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefore from the proper agencies. If any street or private way shall be rendered unsafe

by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the Construction Manager.

10.5.3 After the completion of backfilling in public highways, the Contractor shall remove all surplus material, regrade, and leave in good order and dust-free condition all roadways disturbed by his operations. Contractor shall maintain the surface of the street over the trenches in good condition, promptly filling in all depressions caused by settlement of the backfill.

Add the following:

10.6 Maintaining And Safeguarding Traffic

10.6.1 The Contractor as directed, shall build and maintain such temporary roads, passageways, trestles, and bridges as shall be deemed necessary for the accommodation of traffic on streets and roadways interfered with by the Contractor's operations, for convenient access to the various parts of the work, for access to adjacent buildings and properties, and for other necessary purposes incidental to the work. Contractor shall erect such temporary guards, fences, warning signs, lights, and signals as may be necessary or required to protect all traffic on the streets and roadways. Contractor shall not obstruct vehicular traffic unless it has permission from the agencies having jurisdiction to bar temporarily all traffic from the site of the work. Contractor shall not deprive any building or property of safe and proper access except with the consent of the occupant and after due notice to the Architect/Construction Manager. Free access must be given to every fire alarm box, fire hydrant, valve box, or valve chamber. The temporary roads and the Contractor's access roads shall be located where directed or approved and shall be maintained in good condition. Calcium chloride or other approved means, shall be used to maintain the roads in a dust-free condition. The Contractor shall indemnify and save harmless the Owner from any expense whatsoever due to his operations in streets and highways.

Add the following:

10.7 Hauling Materials

10.7.1 Before starting any work, the Contractor shall arrange with the municipal, County, or State officials having jurisdiction for the use of routes of travel for hauling materials. The Contractor shall map out the travel route from the manufacturing facility or storage area to the site and obtain approval of same from the Construction Manager, the Owner, and others having jurisdiction. Routes of travel so scheduled shall be adhered to throughout the course of the work.

10.7.2 The Contractor shall, at his own expense, handle, haul and distribute all materials and all surplus materials on the different portions of the work as required. Delays in handling involving storage charges and demurrage charges by the railroad and other companies shall be at the expense of the Contractor.

1.11 MODIFICATIONS TO ARTICLE 11 – INSURANCE AND BONDS

11.1 Contractor's Liability Insurance

11.1.1 Delete and replace with:

The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of, or result from, the Contractor's operations under the Contract, whether such

operations be by himself, by any subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable including acts of joint negligence between the Owner and those mentioned previously.

11.1.1.1 Claims under workmen's compensation, disability benefit, and other similar employee benefit acts;

11.1.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

11.1.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

11.1.1.4 Claims for damages insured by all personal injury, liability coverage which are sustained:
(1) by any person as a result of any offense directly or indirectly related to the employment of such person by the Contractor; or, (2) by any other person; and,

11.1.1.5 Claims for damages because of injury to, or destruction of, tangible property, including loss of use resulting therefrom.

11.1.1.6 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.

11.1.1.7 Claims for bodily injury or property damage arising out of completed operations.

11.1.1.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 Delete and replace with:

The insurance required shall be written for not less than any limits of liability specified in the Contractor's Insurance section 11.1.7, or required by law, whichever is greater, and shall include contractual liability insurance as applicable to the Contractor's obligations. Certificates of Insurance on the standard ACORD Form and those acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates shall contain a provision that coverage afforded under the policies will not be canceled until at least thirty (30) days prior written notice has been given to the Owner. The Certificate of Insurance must be accompanied by the actual policy Endorsement conferring the required additional insured status.

The certificate(s) of insurance as additional insured shall name the Owner, its members, officers, employees and consultants, and Boyle Construction, Inc. as "Additional Insureds" under all policies of insurances and the certificate(s) of insurance or policy endorsement(s) as appropriate shall indicate that coverage provided the additional insured is primary, non-contributory coverage.

11.1.3 Delete "and are reasonably available" in the second to last sentence. Add the following subparagraph:

11.1.3.1 No Work shall commence until the Owner has received and issued its approval of all required certificates of insurance and supporting policy Endorsements conferring additional insured status.

Add the following paragraphs:

11.1.4 All liability insurance policies shall be written on a per occurrence basis and shall name the Owner and its agent and employees, its board members, officers, employees, the Architect, its agents,

and the Construction Manager, its agents and employees, and all other consultants agents and employees as additional insured.

11.1.5 Certificate of Insurance shall be submitted within ten (10) days upon Notification of Award of Contract.

11.1.6 Contractor's Liability Insurance must be maintained until the final Certificate of Payment is issued and Completed Operations Insurance is to remain in effect for two (2) years after completion.

11.1.7 Contractor's and Subcontractor's Insurance. The Contractor shall not commence work under the Agreement until he has obtained all the insurance required under this Article and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until the insurance required of the subcontractor has been so obtained and approved. The required insurance shall include:

11.1.7.1 Compensation Insurance: All Contractors shall procure and shall maintain during the life of the Agreement, Workmen's Compensation Insurance for all of his employees to be engaged in work on the Project and, in case of any such work sublet, the Contractor shall require the Subcontractor, similarly, to provide Workmen's Compensation Insurance for all the latter's employees to be engaged in such Work. In case any class of employees engaged in hazardous work on the Project is not protected under the Workmen's Compensation Insurance Statute, the Contractor shall provide, and shall cause each Subcontractor to provide: \$500,000 each accident, \$500,000 policy limit, \$100,000 disease, each employee, Employer's Liability Insurance for the protection of such of his employees as are not otherwise protected. The Contractor shall also have and maintain Employer's Liability Insurance as well as USL&H and Jones Act coverage where applicable. The limit under Coverage B of the standard policy insuring Employer's Liability for each accident shall be not less than \$500,000.00.

11.1.7.2 Contractor's Comprehensive General Liability and Property Damage Insurance: The Contractor shall procure and shall maintain during the life of the Agreement, Contractor's Comprehensive General Liability Insurance including risks arising from completed operations, in an amount not less than \$1,000,000.00 for bodily injury, personal injury and property damage per occurrence, \$2,000,000.00 annual aggregate. The Owner, and its agent and employees, its board members, officers, employees, the Architect, its agents, and the Construction Manager, its agents and employees, and all other consultants agents and employees as additional insured.

The coverage shall include:

- a) Premises/Operations.
- b) Elevators
- c) Independent Contractors
- d) Contractual liability covering liability assumed under the indemnification provision contained in this Agreement and deleting any third-party beneficiary exclusion.
- e) Personal injury coverage, including coverage for liability arising from false arrest, malicious prosecution, willful detention, libel, slander, defamation of character, invasion of privacy and wrongful egress or entry.
- f) Products and completed operations for a period of two (2) years from substantial completion. If not furnished initially, such coverage must be furnished in a separate site specific policy before Acceptance of the Work and final release.
- g) Limited Pollution Cleanup at a limit of \$100,000 for construction projects over \$500,000.

- h) Contingent liability to protect the Contractor against claims arising from the operations of subcontractors.
- i) Aggregate per project endorsement.
- j) Evidence that there are no limitations regarding explosion, collapse and underground limits of liability.

11.1.7.3 Contractor's Automobile and Truck Insurance: The Contractor shall procure and shall maintain during the life of the Agreement, Automobile and Truck Insurance on all vehicles used in the performance of the Agreement in an amount not less than \$1,000,000.00 for bodily injury and property damage combined single limit per accident. The Automobile and Truck Insurance coverage shall be written on a "symbol one" (any auto), basis. The Owner and its agent and employees, its board members, officers, employees, the Architect, its agents, and the Construction Manager, its agents and employees, and all other consultants agents and employees as additional insured.

11.1.7.4 Subcontractor's and Sub-subcontractor's Insurance: The Contractor shall require each of his subcontractors to procure and maintain during the life of his subcontract, the following insurances: (1) Comprehensive General Liability and Property Damage Insurance, (2) Worker's Compensation Insurance, (3) Automobile and Truck Insurance, as specified above, in amounts approved by the Owner. When permitted by law, the Owner and its agent and employees, its board members, officers, employees, the Architect, its agents, and the Construction Manager, its agents and employees, and all other consultants agents and employees as additional insured.

11.1.7.5 Scope of Insurance and Special Hazards: The Explosion, Collapse, and Underground Limits of Liability shall be the same as specified in subparagraph 11.1.7.2 hereof, and any exclusions regarding same shall be deleted.

11.1.7.6 Umbrella Liability: The Contractor shall procure and shall maintain, during the life of the Agreement, umbrella liability limits of at least \$5,000,000.00 each occurrence. The umbrella policy coverage shall, at minimum, follow form over the underlying general liability and auto liability policies coverage's terms and conditions as well as Worker's Compensation Insurance. The umbrella policy is at least as broad as the underlying general liability policy. When permitted by law, the Owner and its agent and employees, its board members, officers, employees, the Architect, its agents, and the Construction Manager, its agents and employees, and all other consultants agents and employees as additional insured.

11.1.7.7 NOT USED

11.1.7.8 Certificate of Insurance must be submitted on the ACORD Form Certificate of Insurance.

11.1.7.9 The Contractor shall either:

- a) require each of his subcontractor's to procure and to maintain during the life of the subcontracts, Subcontractor's Comprehensive General Liability and Property Damage Insurance, Automobile and truck Insurance and Worker's Compensation Insurance, of the type and in the same amounts as specified in the preceding paragraph 11.1.7.4, or;
- b) insure the activities of their subcontractors under their respective policies.

11.1.7.10 All policies shall be issued by insurance companies authorized to conduct such business under the laws of the Commonwealth of Pennsylvania. Insurance certificates shall be furnished in the same number of copies as there are executed copies of the Agreement. Policies expiring at a fixed date before final acceptance of the Work must be renewed and re-filed before such date.

11.1.7.11 The Contractor shall furnish the Owner with a Certificate of Insurance and upon written request the actual policy with respect to insurance coverages required under Article 11.

11.1.7.12 The Contractor, at his own expense, may provide such other insurance against hazards of fire and extended damages as he may deem necessary or advisable to protect his own interests.

11.1.7.13 The Contractor waives all rights against the Owner for damages caused by fire or other perils to the extent covered by insurance provided under this Section, except such rights as they may have to the proceeds of such insurance. Any deductibles, co-insurance, or contribution to the loss will be borne solely by Contractor.

11.1.7.14 The Contractor agrees that it will defend, indemnify and save harmless the Owner and its agent and employees, the Architect, its agents, and the Construction Manager, its agents and employees, and all other consultants agents and employees as additional insured from any and all liability, suits, actions, and demands and all damages, costs or fees on account of injuries to persons or property, including accidental death, arising out of or in connection with the Work, or by reason of the operations under this agreement.

11.1.7.15 Except as modified by the Owner in writing, the insurance requirements herein shall also apply to Subcontractors and to the Sub-Subcontractors, and the Contractor will be responsible for supervision of the filing of copies of the insurance policies and/or insurance certificates prior to any Subcontractor commencing work on the project.

11.1.7.16 All insurance coverage evidenced by the Contractor and each subcontractor in accordance with this contract shall be from the most current A.M. Best's rated A-/VII or better Insurance Company licensed to do business in this State.

11.1.7.17 Insurance submitted to the Owner shall not include deductible clauses. Standard exclusions will be allowed at the discretion of the Owner. Regardless of the allowance of exclusions by the Owner, the Contractor shall be responsible for all exclusions consistent with the risks he assumes under this contract and as imposed by law.

11.1.7.18 Policy limits must apply solely to this project. Designated Construction Project(s) General Aggregate Limit or equivalent must be attached to the policies except the motor vehicle insurance policy.

11.1.7.19 In the event the Contractor provides evidence of insurance in the form of certificates of insurance, valid for a period of time less than the period during which the Contractor is required by the terms of this contract to maintain insurance, said certificates are acceptable, but the Contractor shall be obligated to renew its insurance policies as necessary and to provide new certificates of insurance so that the Owner is continuously in possession of evidence of the Contractor's insurance in accordance with the foregoing provisions.

11.1.7.20 In the event the Contractor fails or refuses to renew its insurance policy, or the policy is cancelled, terminated or modified so that the insurance does not meet the requirements of this subsection, the Owner may refuse to make payment of any further moneys due under this contract or refuse to make payment of moneys due or coming due under other contracts between the Contractor and the Owner. During any period when the required insurance is not in effect, the Owner may suspend performance of the contract. If the contract is so suspended, additional compensation or extensions of contract time is not due on account thereof. Alternatively, the Owner may default the Contractor for lack of insurance, and direct the Surety to complete the project.

11.3 Property Insurance

11.3 Delete all references in section 11.3 to the words "as fiduciary" and replace with the words "in good faith".

11.3.1.1 Delete “all risk” and replace with “Special”.

11.3.1.4 Delete in its entirety.

11.3.3 Add the following:

“To the extent (1) of actual recovery of any insurance proceeds under policies obtained pursuant to paragraph 11.3 and (2) permitted by the applicable policies of insurance.”

11.3.6 Delete the words “copy of each policy that includes” and substitute the words “certificates of insurance evidencing such”.

11.3.7 Delete in its entirety.

11.3.8 Delete Subparagraph 11.3.8 in its entirety and substitute the following:

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

11.3.9 Delete in its entirety.

11.3.10 Delete in its entirety. Add

the following paragraphs;

11.3.12 The Property Insurance obtained by the Owner shall include coverage for risks specified in Paragraph 11.3.1, including collapse and water damage, to the extent covered by the Owner’s “Special Form” insurance.

11.3.13 The fact that the Owner is furnishing Property Insurance shall not be interpreted to relieve the Contractor of his obligation to complete the work without additional cost to the Owner beyond the Contract amount, except as provided in paragraph 11.3.11 above.

11.3.14 The Contractor may carry whatever additional insurance he deems necessary to protect himself against hazards not covered by the Owner’s Property Insurance, including coverage for theft, collapse, water damage, materials and equipment stored off site, and against loss of owned or rented capital equipment and tools owned by mechanics or any tools, the Contractor, the capital value of which is not included in the cost of the work. Owner’s “Special Form” Insurance does not cover theft of material unless installed and made an integral part of the building. This loss must be assumed by the Contractor.

11.4 Performance Bond and Payment Bond: CHANGE Paragraph 11.4, Subparagraph 11.4.1 and Clause 11.4.2 to 11.5, 11.5.1 and 11.5.2 respectively. ADD new Paragraph 11.4, as follows:

11.4 General Provisions Relating to Insurance

11.4.1 All insurance required by this Contract shall be from insurance companies authorized to transact that class of insurance in the Commonwealth of Pennsylvania and having a minimum rating of (or equivalent to) A- VIII by A.M. Best & Company. When required, certificates must be personally and manually signed by the authorized representative of the insurance company shown on the certificate with proof that he/she is an authorized representative thereof and provided to the Owner’s representative as evidence of insurance required in accordance with Paragraph 11.3 herein. In addition, certified, true and exact copies of all insurance policies required by this Contract shall be provided by Contractors and Subcontractors within a reasonable period of time upon written request.

11.4.2 All of the insurance provided by the Contractor, Subcontractors and Owner under the terms of this Contract shall provide primary coverage with respect to the Work, unless noted otherwise herein. Any other insurance maintained by Owner, Contractor, or Subcontractor shall be in excess of this insurance

and shall not contribute to it.

11.4.3 Thirty (30) Calendar Days written notice shall be given to the Owner and Contractor of any cancellation, intent not to renew, or reduction in the policies' coverage except in the application of the Aggregate Limit Provisions.

11.4.4 The insurance coverages and limits required under this Contract are designed to meet the minimum requirements of the Owner. They are not designed as a recommended insurance program for the Contractor or its Subcontractor; and meeting these minimum requirements does not relieve such persons or entities of their obligations under any other Paragraph of this Contract. The Contractor shall not be prevented from acquiring, at its own expense, any other additional insurance coverages it deems necessary for the protection of its Work under the Contract.

11.4.5 The amounts and types of insurance required by the Contract shall conform to the minimum requirements set forth in this Article 11, utilizing Insurance Services Office (ISO) policies and endorsements where applicable.

11.4.6 All of the insurance required by this Article 11 shall be issued as required by law and shall be endorsed, where necessary, to comply with the minimum requirements contained herein.

11.4.7 Owner may elect at any time during the term of this Contract to require Contractor to procure and maintain other or additional insurance. Notice of such election shall be given at least Sixty (60) Days prior to the effective date of the required notifications. Any additional costs incurred by the Contractor or Subcontractors in securing said other or additional insurance shall be reimbursed by the Owner as part of the Cost of the Work, and the Contract Price shall be revised by Change Order to be increased by the amount of such additional cost.

11.4.8 Owner and Contractor waive all rights against (i) each other and the Subcontractors, agents and employees of each other and (ii) Subcontractors, agents and employees, for damages caused by fire or other peril to the extent covered by the Builder's Risk insurance obtained pursuant to Subparagraph 11.3.1.1 hereof, Contractor's Comprehensive General Liability Insurance obtained pursuant to Clause 11.1.7.2 hereof, or Umbrella Liability insurance obtained pursuant to Clause 11.1.7.6 hereof; except such rights as each may have to proceeds of such insurance held by any party to this Agreement or by any Subcontractor. The insurance policies obtained by Owner pursuant to this Article 11 shall include a waiver of subrogation in favor of the Contractor and Subcontractors and the insurance policies obtained by Contractor or Subcontractors pursuant to this Article 11 shall include a waiver of subrogation in favor of the Owner. Without limiting the generality of the foregoing, it is specifically agreed that there is and shall be no waiver of subrogation by Owner or Owner's other Property and Casualty insurer(s) for claims, damages, or losses of whatever nature or type that are insured by any insurance obtained either by Owner, the Contractor, or any Subcontractor of any tier pursuant to any of the provisions of this Agreement. In all events, any insurance obtained by the Owner, Contractor or any Subcontractor of any tier pursuant to this Agreement shall be primary and the policies possessed by Owner, Contractor or any Subcontractor of any tier for purposes of fulfilling the insurance obligations under this Agreement shall be written as primary.

11.4.9 The Owner, its members, officers, employees and consultants, and Boyle Construction, Inc., shall be named as "Additional Insureds" under all policies of insurance described in Subparagraphs 11.3.1, 11.3.2, 11.3.3, 11.3.4, and 11.3.5. Coverage afforded to the Owner, the Architect and its Consultants, and the Construction Manager, as Additional Insureds under said policies shall be primary to any insurance carried by Owner, the Architect and its Consultants, and the Construction Manager.

11.5 Performance Bond and Payment Bond: ADD new Clause, as follows:

11.5.1.3 The successful Bidders will be required to furnish a Performance Bond in the amount equal to One Hundred Percent (100%) of the Contract Sum as security for faithful performance of the Contract, and also a Labor and Material Payment Bond in the amount equal to One Hundred Percent (100%) of the Contract Sum as security for the payment of all persons performing labor on the Project under the Contract and furnishing materials in connection with the Contract. The Performance Bond and Labor and Material Payment Bonds will be in accordance with AIA Document A311. These bonds shall have a minimum A- rating.

ADD new Paragraph and Subparagraph, as follows:

11.6 Stipulation Against Liens

11.6.1 Notice to all Contractors: The law prohibits the filing of mechanics liens on all public works projects, including schools.

11.6.2 The Owner may require that each Contractor execute a Stipulation Against Liens in addition to all other Contract requirements. In this event, the Owner's Solicitor will prepare and file the Stipulation in the Court House of the County in which the Project is situated. As such, no work shall be undertaken at the Project site until the Stipulations Against Liens have been properly filed.

1.12 MODIFICATIONS TO ARTICLE 12 – UNCOVERING AND CORRECTION OF WORK

DELETE Subparagraph 12.1.1 in its entirety and REPLACE with the following:

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 shall, if required by public authority or the Architect, be uncovered for observation, inspection, testing or approval and be replaced at the Contractor's expense without change in the Contract Time.

12.2.2.1 In the second to the last sentence, DELETE the phrase "and to make a claim for breach of warranty." DELETE the last sentence and replace with the following: Nothing herein shall require Owner to provide Contractor with the opportunity to correct Work as a condition precedent to the exercise of any other right or remedy available to the Owner at law, in equity, or under the Contract Documents. A Maintenance Bond in the amount of 10% of the total contract amount shall be posted with the Owner for a period of 18 months.

1.13 MODIFICATIONS TO ARTICLE 13 – MISCELLANEOUS PROVISIONS

13.5 Tests and Inspections:

Subparagraph 13.5.1; Add the following line at the end of the paragraph; "Construction testing shall be provided by the Owner."

DELETE Article 13.5.2 and REPLACE with the following:

13.5.2 If the Construction Manager, Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional construction testing, inspection or approval not included under

Section 13.5.1, the Construction Manager and Architect, will, upon written authorization from the Owner, instruct the Owners Construction Testing Company to make arrangements for such additional testing and inspection. Such costs except as provided in Section

13.5.3 shall be at the Owner's expense.

ADD new Clause under Subparagraph 13.5.2:

13.5.2.1 When work has been installed contrary to any Contract requirement and the Contractor requests the privilege of testing in lieu of removal, such testing shall be at the Contractor's expense.

ADD new Subparagraph, as follows:

13.5.7 Neither the observations of the Architect in administration of the construction Contract, nor inspections, tests or approvals by persons other than the Contractor shall relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents.

DELETE Subparagraph 13.6.1 in its entirety. DELETE

Subparagraph 13.7 in its entirety.

1.14 MODIFICATIONS TO ARTICLE 14 – TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 Termination by the Contractor MODIFY

Subparagraph 14.1.1 as follows:

CHANGE the reference from “30 days” to “60 days” in the first line; in Clause .3, ADD the following at the end of the Clause: “, and there was no cause for the Owner’s withholding of payment;”.

DELETE the Clause 14.1.1.3, in its entirety. DELETE the

Clause 14.1.1.4, in its entirety

14.1.2 In the last line, INSERT a period after the word “completion” and DELETE the remainder of the paragraph.

14.1.3 In the first line, DELETE “or 14.1.2”; in third line, after the word “Work”, DELETE the remainder of the paragraph and REPLACE with the following: “properly executed, demobilization costs, and such other damages as allowable by law.”

DELETE Subparagraph 14.1.4 IN ITS ENTIRETY.

14.2 Termination by the Owner for Cause

14.2.1.1 DELETE the word “repeatedly”.

14.2.1.3 DELETE the word “repeatedly”. REVISE

Clause 14.2.1.4 to read as follows:

has materially breached any provision of the Contract Documents. ADD new

Clauses, as follows:

14.2.1.5 Fails to proceed continuously with the construction and completion of the Work for more than ten (10) days, except as permitted under the Contract Documents.

14.2.1.6 Fails, within the time required, to begin the work to be done under this Contract.

14.2.1.7 If the Contractor shall be adjudged bankrupt or make an assignment for the benefit of creditors, or if a receiver or liquidator shall be appointed for the Contractor or for any of its property and shall not be dismissed within 20 days after such appointment, or the proceedings in connection therewith shall not be dismissed within 20 days after such appointment, or the proceeding in connection therewith shall not be stayed on appeal within the said 20 days.

14.2.1.8 If the Contractor shall refuse or fail to prosecute the work or any part thereof with such diligence as will ensure its completion within the period specified (or any duly authorized extension thereof) or shall fail to complete the work within said period.

14.2.2 DELETE the following word, beginning in the first line: “ , upon certification by the Initial Decision Maker that sufficient cause exists to justify an action,”

14.2.4 DELETE the last sentence of this paragraph.

14.4 Termination by the Owner for Convenience

DELETE Subparagraphs 14.4.1, 14.4.2 and 14.4.3 and REPLACE with new Subparagraphs and Clauses, as follows:

14.4.1 The Owner may, at any time, terminate the Contract for the Owner’s convenience, without cause, and without penalty.

14.4.2 Upon receipt of written notice from the Owner of such termination for Owner’s convenience, the Contractor shall:

1. Cease operations as directed by the Owner in the notice.
2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work.
3. Except for work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and purchase orders and enter into no further Subcontracts and purchase orders, or if directed to do so, assign the Subcontract to the Owner.

14.4.3 In case of such termination for the Owner’s convenience, the Contractor shall be entitled to receive payment from the Owner for all work performed through the date of termination, along with actual costs for demobilization. The Contractor shall not be entitled to any other payment or to damages of any kind as a result of the termination, including but not limited to lost profits and overhead on the unperformed portion of the Work.

1.15 MODIFICATIONS TO ARTICLE 15 – CLAIMS AND DISPUTES

15.1 Claims

DELETE Subparagraph 15.1.2 in its entirety and REPLACE with the following:

15.1.2 Notice of Claims. Claims (excluding those arising under Sections 10.3, 10.4, 11.39 and 11.3.10) by the Contractor must be made within (3) days after occurrence of the event giving rise to such claim or, within (3) days after the Contractor first recognizes, or reasonably should have recognized the condition giving rise to the claim, whichever is later, provided however, that the Contractor shall furnish the Architect and Owner, immediate notice of any claim, including, without limitation, those in connection with concealed or unknown conditions, and shall take all steps reasonably available to it in order to mitigate the alleged or potential damages, delay or other adverse consequences arising out of the condition which is the cause of such claim. Claims must be made by written notice. The failure to provide written notice of any claim within the aforesaid

(3) days after occurrence, shall constitute an irrevocable waiver of the right to make any such claim for damages, time extension, or otherwise.

ADD the following Clauses:

15.1.2.1 Claims will NOT be considered for additional costs for work that could have been discovered by a reasonable pre-bid inspection by the Contractor.

15.1.2.2 Any claim by Contractor under this agreement against the Owner based upon any act or omission of the Owner or other person (other than an approved change order) which Contractor claims changes the agreed Contract price and/or completion date must be made in writing to the Owner no later than seven days following said act or omission which gave rise to the claim.

15.1.2.3 The making of final payment shall not constitute a waiver of Claims by the Owner.

15.1.3 Continuing Contract Performance

DELETE the last sentence of this paragraph.

DELETE Clauses in 15.1.5 in its entirety and REPLACE with the following Clauses:

15.1.5.1 If the Contractor wishes to make a 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 costs and of probable effects of any delay on the progress of the Work. In the case of a continuing delay only one Claim is necessary. The Claim for additional time shall state the start date and end date of the delay and the reason behind the delay. Attached to the Claim, the Contractor shall provide Impact Evaluation from the CPM Schedule, or similar analysis as approved by the Architect, to show all effects of the delay on the critical path of the Project. No Claims for additional time shall be reviewed without the required information and schedule analysis.

15.1.5.2 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 (10% minimum fluctuation beyond that which is historically anticipated) for the period of time, could not have been

reasonably anticipated and had an adverse effect on the critical path of the item on the Contractor's approved Construction Schedule.

15.1.5.3 If the Contractor is delayed in completion of the work under the Contract by any act or neglect of the Owner or of any other Contract employed by the Owner, or by changes in the work, or by any priority or allocation order duly issued by the Federal government, or by any unforeseeable cause beyond the control and without the fault or negligence of the Contractor, or for any cause which the Architect shall deem justifiable, then:

15.1.5.3.1 For each day of delay in the completion of the work, the Contractor shall be allowed one day additional to the time limitation specified in the Contract, it being understood and agreed that the allowance of same shall be solely at the discretion and approval of the Owner.

15.1.5.3.2 No such extension of time shall be made for any delay unless the Contractor, within 5 days after the beginning of the delay, shall have informed the Owner in writing of the nature of the delay, its cause, and its estimated duration. The Owner will review the facts regarding the delay and notify the Contractor within a reasonable time of its decision in the matter.

15.1.5.3.3 No claim for damages or any claim other than for extensions of time as herein provided shall be made or asserted against the Owner by reason of any delays caused by the reasons hereinabove mentioned.

DELETE Subparagraph 15.1.6 in its entirety.

15.2 Initial Decision

15.2.1 REVISE Subparagraph to read as follows: Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to the filing of any Claim with the appropriate Court as set forth herein. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may proceed to the appropriate Court (as set forth below) without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

15.2.6 REVISE Subparagraph to read as follows: Either party may file with the appropriate Court to appeal or overturn the initial decision at any time, subject to the terms of Section 15.2.6.1.

15.2.6.1 REVISE Subparagraph to read as follows: Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file an action with the appropriate Court. If such a demand is made and the party receiving the demand fails to file an action with the appropriate court within 30 days of receipt thereof, then both parties waive their rights to appeal or dispute with respect to the initial decision.

DELETE 15.3 Mediation Section in its Entirety and replace with the following:

15.3 Methods And Procedures To Resolve Disputes

15.3.1 If a dispute should arise between the parties, both parties may mutually agree to mediate or arbitrate the dispute which, unless the parties mutually agree otherwise, shall administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement.

15.3.2 If the parties do not agree to mediation or arbitration, and subject to the provisions of Sections 9.10.4, 9.10.5, and 15.1.7, the parties may exercise such rights or remedies as either may otherwise have under the Contract, or by Laws or Regulations in respect of any dispute by Court action. The parties hereby consent to the exclusive jurisdiction of the Montgomery County Court of Common Pleas, Commonwealth of Pennsylvania, with respect to any dispute arising in connection with this Contract or the enforcement thereof.

DELETE 15.4 Arbitration Section in its Entirety

ADD New Article 15.5 Resolution of Claims and Disputes

15.5.1 All claims, disputes or other matters in question between the parties to this Agreement arising out of or relating to this Agreement or breach thereof (hereinafter for this Article, defined as a "Claim") may, at the Owner's sole option, and only upon the exercise of that sole option by the Owner, together or separately as the Owner sees fit, and irrespective of whether asserted by the Contractor or the Owner, be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then pending, or by litigation in the state or federal court in the venue where the project is located.

15.5.2 In the event that the Contractor wishes to assert a Claim against the Owner, the Contractor shall, as a condition precedent thereto, file a statement of its Claim ("Statement") in writing with the Owner, specifically describing the nature and amount of the claim in the same detail as required by the Rules of Civil Procedure in the State in which the Project is situated for the filing of a Complaint. The Contractor may not unilaterally elect arbitration or cause arbitration to occur, or elect to commence an action in a court of competent jurisdiction regarding a Claim. The Owner has the sole discretion to decide whether or not any Claim shall be submitted for arbitration, or litigated in a court of law or equity, and shall notify the Contractor of its election within 20 days of the receipt of the Contractor's Statement. The failure by the Owner to respond in this time period will be deemed an election against arbitration, and in favor of litigation in the Court of Common Pleas of the State and County where the project is located, or in the United States District Court where the Project is located. Only those Claims that are included in the Statement shall be preserved. Any Claim not included in the Statement shall be deemed waived.

15.5.3 If the Owner notifies Contractor in response to a timely asserted Statement that it has elected arbitration, the Contractor shall file a notice of demand for arbitration with the American Arbitration Association, and shall comply with the American Arbitration Association's Rules then in effect. If the Owner wishes to submit any Claim to arbitration, the Owner shall file a notice of demand for arbitration with the American Arbitration Association and with the Contractor. The Owner may elect in its notice of demand for arbitration, or in any response to a notice of demand filed by the Contractor after arbitration has been elected by the Owner, to have the discovery rights and procedures provided by the Federal rules of Civil Procedure available and enforceable within any such arbitration proceeding. Nothing herein shall be construed as

requiring the Owner to elect arbitration of any Claim.

15.5.4 In the event that the Owner elects to arbitrate any Claim asserted, the arbitration may include by consolidation, joinder or in any manner, at the Owner's sole option, any other entities or persons whom the Owner believes to be substantially involved in a common question of fact or law. In the event that more than one Claim shall be in existence at the same time, the Owner may, at its sole option, decide which of such Claims shall be arbitrated and which shall not be arbitrated. Such decisions shall be final, and no arbitration shall be authorized to consider, decide, or make any award on any claim which Owner has determined shall not be arbitrated.

15.5.5 For any Claim that the Owner elects arbitration as provided herein, the Owner shall, in its sole discretion, select the locale for the arbitration. Any request or demand for arbitration hereunder shall be made before the date when institution of legal or equitable proceedings, based on such claims, dispute, or other matter in question would be barred by the applicable statute of limitations. Nothing herein, however, shall contractually bind a party to a statute of limitations period that would otherwise be inapplicable to that party.

15.5.6 Notwithstanding any other rights or obligations of either of the parties under any Contract Documents or Agreements, the Contractor shall carry on with the performance of the Work hereunder during the pendency of any Claim, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents. However, the Owner shall be under no obligation to make payments to the Contractor of disputed amounts that are part of a Claim during the pendency of any arbitration or other proceeding to resolve such Claims. Moreover, nothing herein shall limit the Owner's rights to withhold payments from the Contractor in accordance with specific provisions of the Contract Documents.

15.5.7 In the event that the Owner's option to designate the dispute resolution method to apply to each Claim is deemed by a court of competent jurisdiction to be unenforceable, then this Paragraph 15.5 shall be stricken in its entirety, and the parties shall have the rights afforded to them at law and equity for the resolution of disputes. In such case the parties agree to the exclusive jurisdiction of the Court of Common Pleas of the State and County in which the Project is situated.

END OF SECTION 007300

SECTION 00.7343 – PENNSYLVANIA PREVAILING WAGE RATE REQUIREMENTS

PART 1 - GENERAL

1.1 Prevailing Wage Rates: Prevailing Wage Rates and notes are attached to the end of this section.

1.2 Prevailing Wage Rates

1. The general provisions of the Pennsylvania Prevailing Wage Act, approved August 15, 1961, as amended are applicable to this project.
2. The general prevailing minimum wage rates including contributions for employee benefits as shall have been determined by the Secretary of Labor and Industry (hereinafter "Secretary"), which must be paid to the workmen, employed in the performance of the Contract.
3. The Contractor shall pay no less than the wage rates as determined in the decision of the Secretary and shall comply with the conditions of the Pennsylvania Prevailing Wage Act approved August 15, 1961 (Act No. 442), as amended August 9, 1963 (Act No. 342), and the Regulations issued pursuant thereto, to assure the full and proper payment of said rates.
4. These Contract provisions shall apply to all work performed on the Contract by the Contractor and to all work performed on the contract by all subcontractors.
5. The Contractor shall insert in each of his subcontracts all of the stipulations contained in these required provisions.
6. No workmen may be employed on the Work except in accordance with the classifications set forth in the decision of the Secretary. In the event that additional or different classifications are necessary the procedure set forth in the Regulations shall be followed.
7. All workmen employed or working on the Work shall be paid unconditionally, regardless of whether any contractual relationship exists or the contractual relationship which may be alleged to exist between any contractor, subcontractor and workmen, not less than once a week without deductions or rebate, on any account, either directly or indirectly, except authorized deductions, the full amount due at the time of payment, computed at the rates applicable to the time worked in the appropriate classification. Nothing in this Contract, the Act or the Regulations shall prohibit the payment of more than the general prevailing minimum wage rates as determined by the Secretary to the workmen on the Work.
8. The Contractor and each subcontractor shall post for the entire period of construction the wage determination decisions of the Secretary, including the effective date of any changes thereof, in a prominent and easily accessible place or places at the site of the work and at such place or places used by them to pay workmen their wages. The posted notice of wage rates must contain the following information:
 - a. Name of project.
 - b. Name of public body of which it is constructed.
 - c. The crafts and classifications of workmen listed in the Secretary's general prevailing minimum wage rate determination for the particular project.

- d. The general prevailing minimum wage rates determined for each craft and classification and the effective date of any changes.
 - e. A statement advising workmen that if they have been paid less than the general prevailing minimum wage rate for their job classification or that the Contractor and/or subcontractor are not complying with the Act or the Regulations in any manner whatsoever, they may file a protest with the Secretary within three (3) months of the date of the occurrence, objecting to the payment to the Contractor to the extent of the amount or amounts due or to become due to them as wages for work performed on the Project. Any workmen paid less than the rate specified in the Contract shall have a civil right of action for the difference between the wage paid and wages stipulated in the Contract, which right of action must be exercised within six (6) months from the occurrence of the event creating such right.
9. The Contractor and all subcontractors, shall keep an accurate record showing the name, craft and/or classification, number of hours worked per day, and the actual hourly rate of wage paid (including employee benefits) to each workman employed by him in connection with the Work and such record must include any deductions from each workman. The record shall be preserved for two (2) years from the date of payment and shall open at all reasonable hours to the inspection of the Owner and to the Secretary or his duly authorized representative.
10. 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 and only apprentices whose training and employment are in full compliance with the provisions of the Apprenticeship and Training Act approved July 14, 1961 (Act No. 304) and the Rules and Regulation issued pursuant thereto shall be employed on the Work. Any workmen using the tools of a craft that does not qualify as an apprentice within the provisions of this submission shall be paid the rate predetermined for journeyman in that particular craft and/or classification.
11. Wages shall be paid without any deductions except authorized deductions. Employers not party to a contract requiring contributions for employee benefits which the Secretary has determined to be included in the general prevailing minimum wage rate shall pay the monetary equivalent thereof directly to the workman.
12. Payment of compensation to workmen for work performed on public work on a lump sum basis, or apiece work system, or a price certain for the completion of a certain amount of work, or the production of a certain result shall be deemed a violation of the Act and the Regulations, regardless of the average hourly earnings resulting therefrom.
13. Each Contractor and each subcontractor shall file a statement each week and a final statement at the conclusion of the Work on the Contract with Owner, under oath, and in form satisfactory to the Secretary, certifying that all workmen have been paid wages in strict conformity with the provisions of the Contract as prescribed by the Regulations, or if any wages remain unpaid, to the amount of wages due and owing to each workman respectively.
14. The provision of the Act and the Regulations are incorporated by reference in the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 00.7343

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project Name:	Upper Pottsgrove Township New Municipal Complex
General Description:	The construction of a new 1-story +-12,000sf administration/police department building and the construction of a new 1-story +-8500sf public works building.
Project Locality	Pottstown, PA
Awarding Agency:	Upper Pottsgrove Township
Contract Award Date:	6/9/2025
Serial Number:	25-02485
Project Classification:	Building
Determination Date:	3/7/2025
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Montgomery County

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 25-02485 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	6/1/2023		\$57.84	\$43.36	\$101.20
Asbestos & Insulation Workers	5/1/2024		\$59.37	\$46.03	\$105.40
Boilermaker (Commercial, Institutional, and Minor Repair Work)	3/1/2024		\$36.71	\$19.13	\$55.84
Boilermakers	1/1/2023		\$51.27	\$35.30	\$86.57
Boilermakers	1/1/2024		\$52.10	\$35.72	\$87.82
Bricklayer	5/1/2023		\$47.50	\$31.42	\$78.92
Carpenter - Chief of Party (Surveying & Layout)	5/1/2023		\$50.57	\$29.02	\$79.59
Carpenter - Chief of Party (Surveying & Layout)	5/1/2024		\$52.58	\$29.02	\$81.60
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$54.59	\$29.02	\$83.61
Carpenter - Instrument Person (Surveying & Layout)	5/1/2023		\$43.97	\$29.02	\$72.99
Carpenter - Instrument Person (Surveying & Layout)	5/1/2024		\$45.72	\$29.02	\$74.74
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		\$47.47	\$29.02	\$76.49
Carpenter - Rodman (Surveying & Layout)	5/1/2023		\$21.99	\$20.62	\$42.61
Carpenter - Rodman (Surveying & Layout)	5/1/2024		\$22.86	\$20.62	\$43.48
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$23.74	\$20.62	\$44.36
Carpenters	5/1/2023		\$43.97	\$29.02	\$72.99
Carpenters	5/1/2024		\$45.72	\$29.02	\$74.74
Carpenters	5/1/2025		\$47.47	\$29.02	\$76.49
Cement Finishers & Plasterers	5/1/2022		\$38.57	\$32.39	\$70.96
Cement Masons	5/1/2023		\$44.20	\$32.96	\$77.16
Cement Masons	5/1/2024		\$46.70	\$32.46	\$79.16
Dockbuilder, Pile Drivers	5/1/2023		\$50.48	\$37.99	\$88.47
Dockbuilder, Pile Drivers	5/1/2024		\$52.98	\$37.99	\$90.97
Dockbuilder, Pile Drivers	5/1/2025		\$55.23	\$37.99	\$93.22
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/Pile Driver Diver	5/1/2023		\$58.41	\$41.74	\$100.15
Dockbuilder/Pile Driver Diver	5/1/2024		\$61.54	\$41.74	\$103.28
Dockbuilder/Pile Driver Diver	5/1/2025		\$64.35	\$41.74	\$106.09
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2023		\$50.48	\$37.99	\$88.47
Dockbuilder/pile driver tender	5/1/2024		\$52.98	\$37.99	\$90.97
Dockbuilder/pile driver tender	5/1/2025		\$55.23	\$37.99	\$93.22
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Drywall Finisher	5/1/2023		\$38.77	\$31.12	\$69.89
Drywall Finisher	5/1/2024		\$42.25	\$32.56	\$74.81
Electricians	9/1/2022		\$40.52	\$25.63	\$66.15
Electricians	9/1/2023		\$42.02	\$25.69	\$67.71
Electricians	9/2/2024		\$44.52	\$26.83	\$71.35
Elevator Constructor	1/1/2023		\$66.21	\$43.64	\$109.85
Elevator Constructor	1/1/2024		\$68.97	\$44.70	\$113.67
Elevator Constructor	1/1/2025		\$71.85	\$45.77	\$117.62
Floor Coverer	5/1/2023		\$50.12	\$29.21	\$79.33
Floor Coverer	5/1/2024		\$52.19	\$29.21	\$81.40
Glazier	5/1/2023		\$46.68	\$36.62	\$83.30

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 25-02485 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Glazier	5/1/2024		\$48.00	\$37.50	\$85.50
Interior Finish	5/1/2019		\$30.20	\$25.80	\$56.00
Interior Finish	5/1/2023		\$34.60	\$25.80	\$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	1/1/2023		\$50.70	\$39.51	\$90.21
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 (Riggers)	7/1/2024		\$44.64	\$34.39	\$79.03
Iron Workers (Rodman/Reinforcing)	7/1/2023		\$45.70	\$34.77	\$80.47
Iron Workers (Rodman/Reinforcing)	7/1/2024		\$47.70	\$34.77	\$82.47
Laborers (Class 01 - See notes)	5/1/2022		\$33.35	\$25.65	\$59.00
Laborers (Class 01 - See notes)	5/1/2023		\$34.60	\$25.80	\$60.40
Laborers (Class 01 - See notes)	5/1/2024		\$35.85	\$26.00	\$61.85
Laborers (Class 02 - See notes)	5/1/2022		\$36.70	\$27.00	\$63.70
Laborers (Class 02 - See notes)	5/1/2023		\$37.95	\$27.30	\$65.25
Laborers (Class 02 - See notes)	5/1/2024		\$39.40	\$27.55	\$66.95
Laborers (Class 03 - See notes)	5/1/2022		\$33.77	\$25.83	\$59.60
Laborers (Class 03 - See notes)	5/1/2023		\$35.02	\$25.98	\$61.00
Laborers (Class 03 - See notes)	5/1/2024		\$36.27	\$26.18	\$62.45
Laborers (Class 04 - See notes)	5/1/2022		\$33.77	\$25.83	\$59.60
Laborers (Class 04 - See notes)	5/1/2023		\$35.02	\$25.98	\$61.00
Laborers (Class 04 - See notes)	5/1/2024		\$36.27	\$26.18	\$62.45
Laborers (Class 05 - See notes)	5/1/2022		\$33.35	\$25.65	\$59.00
Laborers (Class 05 - See notes)	5/1/2023		\$34.60	\$25.50	\$60.10
Laborers (Class 05 - See notes)	5/1/2024		\$35.85	\$26.00	\$61.85
Landscape Laborer	5/1/2023		\$29.45	\$23.98	\$53.43
Landscape Laborer	5/1/2024		\$30.70	\$24.23	\$54.93
Marble Finisher	5/1/2023		\$39.52	\$29.30	\$68.82
Marble Mason	5/1/2023		\$47.20	\$31.95	\$79.15
Mason Tender, Cement	5/1/2019		\$30.52	\$25.98	\$56.50
Mason Tender, Cement	5/1/2023		\$35.02	\$25.98	\$61.00
Millwright	5/1/2023		\$51.60	\$35.81	\$87.41
Millwright	5/1/2024		\$54.67	\$35.81	\$90.48
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)	5/1/2023		\$52.20	\$32.81	\$85.01
Operators (Building, Class 01 - See Notes)	5/1/2024		\$53.36	\$33.65	\$87.01
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)	5/1/2023		\$55.20	\$33.70	\$88.90
Operators (Building, Class 01A - See Notes)	5/1/2024		\$56.37	\$34.53	\$90.90
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)	5/1/2023		\$51.95	\$32.74	\$84.69
Operators (Building, Class 02 - See Notes)	5/1/2024		\$53.11	\$33.58	\$86.69

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 25-02485 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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)	5/1/2023		\$54.97	\$33.61	\$88.58
Operators (Building, Class 02A - See Notes)	5/1/2024		\$56.13	\$34.45	\$90.58
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)	5/1/2023		\$47.87	\$31.53	\$79.40
Operators (Building, Class 03 - See Notes)	5/1/2024		\$49.03	\$32.37	\$81.40
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)	5/1/2023		\$47.57	\$31.44	\$79.01
Operators (Building, Class 04 - See Notes)	5/1/2024		\$48.73	\$32.28	\$81.01
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)	5/1/2023		\$45.85	\$30.93	\$76.78
Operators (Building, Class 05 - See Notes)	5/1/2024		\$47.00	\$31.78	\$78.78
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)	5/1/2023		\$44.85	\$30.65	\$75.50
Operators (Building, Class 06 - See Notes)	5/1/2024		\$46.02	\$31.48	\$77.50
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)	5/1/2023		\$63.33	\$37.68	\$101.01
Operators (Building, Class 07A- See Notes)	5/1/2024		\$64.80	\$38.61	\$103.41
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)	5/1/2023		\$63.04	\$37.59	\$100.63
Operators (Building, Class 07B- See Notes)	5/1/2024		\$64.50	\$38.53	\$103.03
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)	5/1/2023		\$42.32	\$32.91	\$75.23
Painters Class 1 (see notes)	5/1/2024		\$42.97	\$34.11	\$77.08
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters Class 4 (see notes)	5/1/2023		\$44.41	\$32.91	\$77.32
Painters Class 4 (see notes)	5/1/2024		\$45.06	\$34.11	\$79.17
Plasterers	5/1/2021		\$38.37	\$31.84	\$70.21
Plasterers	5/1/2023		\$39.32	\$32.64	\$71.96
Plasterers	5/1/2024		\$39.88	\$33.08	\$72.96
plumber	5/1/2023		\$64.73	\$37.61	\$102.34
plumber	5/1/2024		\$67.53	\$38.31	\$105.84
Pointers, Caulkers, Cleaners	5/1/2023		\$48.80	\$30.70	\$79.50
Roofers (Composition)	5/1/2023		\$42.63	\$34.62	\$77.25
Roofers (Composition)	5/1/2024		\$44.13	\$34.77	\$78.90
Roofers (Shingle)	5/1/2021		\$30.50	\$21.55	\$52.05

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

Project: 25-02485 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Roofers (Shingle)	5/1/2023		\$32.85	\$22.10	\$54.95
Roofers (Shingle)	5/1/2024		\$34.35	\$22.20	\$56.55
Roofers (Slate & Tile)	5/1/2021		\$33.50	\$21.55	\$55.05
Roofers (Slate & Tile)	5/1/2023		\$35.85	\$22.10	\$57.95
Roofers (Slate & Tile)	5/1/2024		\$37.35	\$22.20	\$59.55
Sheet Metal Workers	5/1/2023		\$57.31	\$48.97	\$106.28
Sheet Metal Workers	5/1/2024		\$59.22	\$50.56	\$109.78
Sign Makers and Hangars	7/15/2022		\$30.54	\$24.35	\$54.89
Sign Makers and Hangars	7/15/2023		\$31.76	\$24.63	\$56.39
Sign Makers and Hangars	7/15/2024		\$32.32	\$25.82	\$58.14
Sprinklerfitters	1/1/2023		\$62.23	\$31.99	\$94.22
Steamfitters	5/1/2023		\$67.37	\$41.99	\$109.36
Steamfitters	5/1/2024		\$70.32	\$43.09	\$113.41
Stone Masons	5/1/2023		\$47.20	\$31.95	\$79.15
Terrazzo Finisher	5/1/2023		\$43.75	\$27.86	\$71.61
Terrazzo Grinder	5/1/2023		\$44.02	\$27.86	\$71.88
Terrazzo Mechanics	5/1/2023		\$50.26	\$29.56	\$79.82
Tile Finisher	5/1/2023		\$39.52	\$29.30	\$68.82
Tile Setter	5/1/2023		\$50.26	\$29.56	\$79.82
Truckdriver class 1(see notes)	5/1/2022		\$35.60	\$20.74	\$56.34
Truckdriver class 1(see notes)	5/1/2023		\$36.29	\$21.55	\$57.84
Truckdriver class 1(see notes)	5/1/2024		\$36.79	\$22.54	\$59.33
Truckdriver class 2 (see notes)	5/1/2022		\$35.70	\$20.74	\$56.44
Truckdriver class 2 (see notes)	5/1/2023		\$36.39	\$21.55	\$57.94
Truckdriver class 2 (see notes)	5/1/2024		\$36.89	\$22.54	\$59.43
Window Film / Tint Installer	6/1/2019		\$24.52	\$12.08	\$36.60
Window Film / Tint Installer	6/1/2024		\$26.37	\$14.83	\$41.20

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 25-02485 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenter - Chief of Party (Surveying & Layout)	5/1/2023		\$63.24	\$29.06	\$92.30
Carpenter - Chief of Party (Surveying & Layout)	5/1/2024		\$65.19	\$29.06	\$94.25
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		\$67.15	\$29.06	\$96.21
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		\$69.10	\$29.06	\$98.16
Carpenter - Instrument Person (Surveying & Layout)	5/1/2023		\$54.99	\$29.06	\$84.05
Carpenter - Instrument Person (Surveying & Layout)	5/1/2024		\$56.69	\$29.06	\$85.75
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)	5/1/2023		\$43.99	\$22.41	\$66.40
Carpenter - Rodman (Surveying & Layout)	5/1/2024		\$45.35	\$22.41	\$67.76
Carpenter - Rodman (Surveying & Layout)	5/1/2025		\$46.71	\$22.41	\$69.12
Carpenter - Rodman (Surveying & Layout)	5/1/2026		\$48.07	\$22.41	\$70.48
Carpenter	5/1/2023		\$54.99	\$29.06	\$84.05
Carpenter	5/1/2024		\$56.69	\$29.06	\$85.75
Carpenter	5/1/2025		\$58.49	\$29.06	\$87.55
Carpenter	5/1/2026		\$60.19	\$29.06	\$89.25
Cement Masons	5/1/2023		\$43.20	\$32.91	\$76.11
Dockbuilder, Pile Drivers	5/1/2023		\$50.48	\$37.99	\$88.47
Dockbuilder, Pile Drivers	5/1/2024		\$52.98	\$37.99	\$90.97
Dockbuilder, Pile Drivers	5/1/2025		\$55.23	\$37.99	\$93.22
Dockbuilder, Pile Drivers	5/1/2026		\$56.98	\$37.99	\$94.97
Dockbuilder/ Pile driver diver	5/1/2023		\$63.10	\$37.99	\$101.09
Dockbuilder/ Pile driver diver	5/1/2024		\$66.25	\$37.99	\$104.24
Dockbuilder/ Pile driver diver	5/1/2025		\$69.04	\$37.99	\$107.03
Dockbuilder/ Pile driver diver	5/1/2026		\$71.23	\$37.99	\$109.22
Dockbuilder/Pile Driver Diver	5/1/2023		\$58.41	\$41.74	\$100.15
Dockbuilder/Pile Driver Diver	5/1/2024		\$61.54	\$41.74	\$103.28
Dockbuilder/Pile Driver Diver	5/1/2025		\$64.35	\$41.74	\$106.09
Dockbuilder/Pile Driver Diver	5/1/2026		\$66.54	\$41.74	\$108.28
Dockbuilder/pile driver tender	5/1/2023		\$50.48	\$37.99	\$88.47
Dockbuilder/pile driver tender	5/1/2024		\$52.98	\$37.99	\$90.97
Dockbuilder/pile driver tender	5/1/2025		\$55.23	\$37.99	\$93.22
Dockbuilder/pile driver tender	5/1/2026		\$56.98	\$37.99	\$94.97
Electric Lineman	5/30/2022		\$59.17	\$31.48	\$90.65
Electric Lineman	5/29/2023		\$60.48	\$32.77	\$93.25
Electric Lineman	6/3/2024		\$62.07	\$33.96	\$96.03
Iron Workers (Bridge, Structural, Ornamental, Precast)	1/1/2023		\$50.70	\$39.51	\$90.21
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)	5/1/2022		\$36.30	\$27.20	\$63.50
Laborers (Class 01 - See notes)	5/1/2023		\$37.55	\$27.45	\$65.00
Laborers (Class 01 - See notes)	5/1/2024		\$38.80	\$27.65	\$66.45
Laborers (Class 02 - See notes)	5/1/2022		\$36.50	\$27.20	\$63.70

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 25-02485 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 02 - See notes)	5/1/2023		\$37.75	\$27.45	\$65.20
Laborers (Class 02 - See notes)	5/1/2024		\$39.00	\$27.65	\$66.65
Laborers (Class 03 - See notes)	5/1/2022		\$36.50	\$27.20	\$63.70
Laborers (Class 03 - See notes)	5/1/2023		\$37.75	\$27.45	\$65.20
Laborers (Class 03 - See notes)	5/1/2024		\$39.00	\$27.65	\$66.65
Laborers (Class 04 - See notes)	5/1/2022		\$31.10	\$27.20	\$58.30
Laborers (Class 04 - See notes)	5/1/2023		\$32.35	\$27.45	\$59.80
Laborers (Class 04 - See notes)	5/1/2024		\$33.60	\$27.65	\$61.25
Laborers (Class 05 - See notes)	5/1/2022		\$37.15	\$27.20	\$64.35
Laborers (Class 05 - See notes)	5/1/2023		\$38.40	\$27.45	\$65.85
Laborers (Class 05 - See notes)	5/1/2024		\$39.65	\$27.65	\$67.30
Laborers (Class 06 - See notes)	5/1/2022		\$37.20	\$27.20	\$64.40
Laborers (Class 06 - See notes)	5/1/2023		\$38.40	\$27.45	\$65.85
Laborers (Class 06 - See notes)	5/1/2024		\$39.70	\$27.65	\$67.35
Laborers (Class 07 - See notes)	5/1/2022		\$37.05	\$27.20	\$64.25
Laborers (Class 07 - See notes)	5/1/2023		\$38.30	\$27.45	\$65.75
Laborers (Class 07 - See notes)	5/1/2024		\$39.55	\$27.65	\$67.20
Laborers (Class 08 - See notes)	5/1/2022		\$36.80	\$27.20	\$64.00
Laborers (Class 08 - See notes)	5/1/2023		\$38.05	\$27.45	\$65.50
Laborers (Class 08 - See notes)	5/1/2024		\$39.30	\$27.65	\$66.95
Laborers (Class 09 - See notes)	5/1/2022		\$36.65	\$27.20	\$63.85
Laborers (Class 09 - See notes)	5/1/2023		\$37.90	\$27.45	\$65.35
Laborers (Class 09 - See notes)	5/1/2024		\$39.15	\$27.65	\$66.80
Laborers (Class 10- See notes)	5/1/2022		\$36.80	\$27.20	\$64.00
Laborers (Class 10- See notes)	5/1/2023		\$38.05	\$27.45	\$65.50
Laborers (Class 10- See notes)	5/1/2024		\$39.30	\$27.65	\$66.95
Laborers (Class 11 -See Notes)	5/1/2022		\$36.70	\$27.20	\$63.90
Laborers (Class 11 -See Notes)	5/1/2023		\$37.95	\$27.45	\$65.40
Laborers (Class 11 -See Notes)	5/1/2024		\$39.20	\$27.65	\$66.85
Laborers (Class 12 -See Notes)	5/1/2022		\$38.40	\$27.20	\$65.60
Laborers (Class 12 -See Notes)	5/1/2023		\$39.65	\$27.45	\$67.10
Laborers (Class 12 -See Notes)	5/1/2024		\$40.90	\$27.65	\$68.55
Laborers (Class 13 -See Notes)	5/1/2022		\$40.43	\$27.20	\$67.63
Laborers (Class 13 -See Notes)	5/1/2023		\$41.65	\$27.45	\$69.10
Laborers (Class 13 -See Notes)	5/1/2024		\$42.93	\$27.65	\$70.58
Laborers (Class 14 -See Notes)	5/1/2022		\$36.55	\$27.20	\$63.75
Laborers (Class 14 -See Notes)	5/1/2023		\$38.25	\$27.45	\$65.70
Laborers (Class 14 -See Notes)	5/1/2024		\$39.50	\$27.65	\$67.15
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2022		\$30.17	\$19.18	\$49.35
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2023		\$31.42	\$19.43	\$50.85
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2024		\$32.67	\$19.63	\$52.30
Laborers Utility (PGW ONLY)	5/1/2022		\$37.20	\$19.18	\$56.38
Laborers Utility (PGW ONLY)	5/1/2023		\$38.45	\$19.43	\$57.88
Laborers Utility (PGW ONLY)	5/1/2024		\$39.70	\$19.63	\$59.33

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 25-02485 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Landscape Laborer	5/1/2022		\$27.73	\$23.65	\$51.38
Landscape Laborer	5/1/2023		\$29.03	\$23.80	\$52.83
Landscape Laborer	5/1/2024		\$30.28	\$24.05	\$54.33
Millwright	5/1/2023		\$51.60	\$35.81	\$87.41
Millwright	5/1/2024		\$54.67	\$35.81	\$90.48
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)	5/1/2023		\$52.20	\$32.81	\$85.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2024		\$53.36	\$33.65	\$87.01
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)	5/1/2023		\$55.20	\$33.70	\$88.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2024		\$56.37	\$34.53	\$90.90
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)	5/1/2023		\$51.95	\$32.74	\$84.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2024		\$53.11	\$33.58	\$86.69
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)	5/1/2023		\$54.97	\$33.61	\$88.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2024		\$56.13	\$34.45	\$90.58
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)	5/1/2023		\$47.87	\$31.53	\$79.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2024		\$49.03	\$32.37	\$81.40
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)	5/1/2023		\$47.57	\$31.44	\$79.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2024		\$48.73	\$32.28	\$81.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		\$49.88	\$33.13	\$83.01

BUREAU OF LABOR LAW COMPLIANCE PREVAILING WAGES PROJECT RATES

Project: 25-02485 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Highway)					
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)	5/1/2023		\$45.85	\$30.93	\$76.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2024		\$47.00	\$31.78	\$78.78
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)	5/1/2023		\$44.85	\$30.65	\$75.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2024		\$46.02	\$31.48	\$77.50
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)	5/1/2023		\$63.33	\$37.68	\$101.01
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2024		\$64.80	\$38.61	\$103.41
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)	5/1/2023		\$63.04	\$37.59	\$100.63
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2024		\$64.50	\$38.53	\$103.03
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		\$65.97	\$39.46	\$105.43
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		\$67.44	\$40.39	\$107.83
Painters - Line Stripping	12/1/2023		\$42.10	\$27.43	\$69.53
Painters - Line Stripping	12/1/2024		\$44.12	\$27.91	\$72.03
Painters Class 2 (see notes)	2/1/2023		\$48.82	\$32.09	\$80.91
Painters Class 2 (see notes)	2/1/2024		\$49.57	\$33.34	\$82.91
Painters Class 2 (see notes)	2/1/2025		\$50.85	\$33.91	\$84.76
Painters Class 3 (see notes)	2/1/2023		\$59.78	\$32.13	\$91.91
Painters Class 3 (see notes)	2/1/2024		\$60.53	\$33.38	\$93.91
Painters Class 3 (see notes)	2/1/2025		\$61.81	\$33.95	\$95.76
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2022		\$61.34	\$40.28	\$101.62
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2023		\$64.00	\$41.68	\$105.68
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2024		\$66.80	\$42.93	\$109.73
Truckdriver class 1(see notes)	5/1/2022		\$35.45	\$20.74	\$56.19
Truckdriver class 1(see notes)	5/1/2023		\$36.14	\$21.55	\$57.69
Truckdriver class 1(see notes)	5/1/2024		\$36.64	\$22.54	\$59.18
Truckdriver class 2 (see notes)	5/1/2022		\$35.55	\$20.74	\$56.29

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

Project: 25-02485 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Truckdriver class 2 (see notes)	5/1/2023		\$36.24	\$21.55	\$57.79
Truckdriver class 2 (see notes)	5/1/2024		\$36.74	\$22.54	\$59.28

PUBLIC WORK EMPLOYMENT VERIFICATION ACT

General. In accordance with Act 127 of 2012, known as the Public Works Employment Verification Act ("the Act"), effective January 1, 2013, 43 P.S. §§167.1-167.11, use the Federal Government's E-Verify system to ensure that all employees performing work on the project, including subcontractor's employees, are authorized to work in the United States.

Verification Form. Verify the employment eligibility of each new employee hired after January 1, 2013 and submit the Commonwealth Public Works Employment Verification Form ("Form") included in the bid package attachments to the Department.

Contractor. Fax the Form, signed by authorized representative of the Contractor, possessing sufficient knowledge to make the representations and certifications in the Form to Contract Awards at 717-705-1504 within 7 days of the bid opening. Failure or refusal to provide the Form will be considered a refusal to comply with bidding requirements, will result in rejection of the bid, and will be subject to the enforcement activities, sanctions and civil penalties specified in the Act.

Subcontractor. Obtain a signed Form from every subcontractor performing work on the project, signed by authorized representative of the subcontractor, possessing sufficient knowledge to make the representations and certifications in the Form and submit it to the Representative when requesting subcontractor approval. Failure or refusal to provide the Form will be considered a refusal to comply with subcontractor approval requirements, will result in rejection of the subcontractor request, and will subject the subcontractor to the enforcement activities, sanctions and civil penalties specified in the Act.

Include information about the requirements of the Act in all the subcontracts.

The Department of General Services is the Commonwealth agency responsible for enforcement and administration of the Act. Please direct questions about the Act to:

Department of General Services Public Works
Employment Verification Compliance Office
Room 105 Tent Building
18th and Herr Streets
Harrisburg, PA 17125
Fax: 717-214-3669



COMMONWEALTH OF PENNSYLVANIA

PUBLIC WORKS EMPLOYMENT VERIFICATION FORM

Date _____

Business or Organization Name (Employer) _____

Address _____

City _____ State _____ Zip Code _____

☐ Contractor ☐ {dzõÖ2yúñl-Öú2W óÖKŠÖŀ 2yŠú

Contracting Public Body _____

Contract/Project No _____

Project Description _____

Project Location _____

As a contractor/subcontractor for the above referenced public works contract, I hereby affirm that as of the above date, our company is in compliance with the Public Works Employment Verification Act ('the Act') through utilization of the federal E-Verify Program (EVP) operated by the United States Department of Homeland Security. To the best of my/our knowledge, all employees hired post January 1, 2013 are authorized to work in the United States.

It is also agreed to that all public works contractors/subcontractors will utilize the federal EVP to verify the employment eligibility of each new hire within five (5) business days of the employee start date throughout the duration of the public works contract. Documentation confirming the use of the federal EVP upon each new hire shall be maintained in the event of an investigation or audit.

I, _____, authorized representative of the company above, attest that the information contained in this verification form is true and correct and understand that the submission of false or misleading information in connection with the above verification shall be subject to sanctions provided by law.

Authorized Representative Signature

Redevelopment Assistance Capital Program (RACP)

Program Guidelines



November 2024

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Section I – General

A) Introduction

Redevelopment Assistance Capital Program (RACP) projects are primarily economic development projects, authorized in the Redevelopment Assistance section of a Capital Budget Itemization Act, have a regional or multi-jurisdictional impact, and generate substantial increases or maintain current levels of employment, tax revenues or other measures of economic activity. Included are projects with cultural, historic, recreational, or civic significance.

RACP projects are state-funded projects that cannot obtain primary funding under other state programs. Projects that can normally obtain funding from PENNDOT, PENNVEST, the Department of Community and Economic Development, or other state agencies are generally restricted from participating in the Redevelopment Assistance Capital Program.

****If a RACP project does include and require improvements to housing, roads, bridges, tunnels, infrastructure, and/or drinking water/waste disposal/wastewater/stormwater systems, these improvements must not be the primary focus of the project; and as per Act 77 of 2013, they must be associated with a project that is part of an economic development project; and in the case of housing, must be part of a community revitalization plan and in accordance with RACP requirements. These additional requirements for housing projects are not required if the funding is from a designated special allocation for housing.*

B) Eligible Projects

All grants awarded through the Redevelopment Assistance Capital Program (RACP) MUST be for projects included in one (1) or more of the PA Capital Budget Project Itemization Acts. Only itemizations/projects from these Acts that have remaining “Project Allocation” amounts and that have not been statutorily “sunset” pursuant to Act 77 of 2013 are eligible (list of itemizations). Potential projects are typically added to Capital Budget Project Itemization Bills by members of the House of Representatives, Senate and Administration.

Redevelopment Assistance Capital Program grants must be eligible for tax-exempt bond funding under existing federal law requirements. The Applicant must demonstrate and document that the project qualifies for financing with federally tax-exempt bonds. Applicants will be required to comply with procedures to maintain the tax-exempt status of bonds issued to finance the project.

C) Eligible Grantees

Grantees for Redevelopment Assistance Capital Program funding must be one (1) of the following:

- 1) A redevelopment authority.
- 2) An industrial development authority.
- 3) A general purpose unit of local government.
- 4) A local development district that has an agreement with a general purpose unit of local government under which the unit assumes ultimate responsibility for debt incurred to obtain the non-State financial participation.
- 5) A public authority established pursuant to the laws of this Commonwealth.
- 6) An industrial development agency:
 - a. which has been certified as an industrial development agency by the Pennsylvania Industrial Development Authority Board under the act of May 17, 1956 (1955 P.L.1609, No.537), known as the Pennsylvania Industrial Development Authority Act; and
 - b. which is itself or which is acting through a wholly owned subsidiary that is exempt from Federal taxation under section 501 (c) (3) of the Internal Revenue Code of 1986.

D) Eligible Costs

A RACP project must have a total cost of at least \$1,000,000.

- 1) Reimbursable Cost Categories – All costs below must be directly related to the RACP project. The following costs are typically eligible for reimbursement and/or can be a match for RACP funds.
 - Construction – the primary use and intent of RACP funds should be the reimbursement of construction costs.
 - Interest during construction – interest costs paid as a result of the use of interim or bridge financing for the project during construction can be reimbursed from RACP funds.
 - Permits – costs for acquiring permits needed for construction of the project can be reimbursed from RACP funds.
 - Land – if land is purchased for the project, a certified as-is appraisal must be provided. RACP funds may be used to reimburse the costs for land acquisition. The appraised value may include permanent improvements exclusive to the RACP project. The appraisal should be “as-is” value.
 - o Land Acquisition Costs cannot be the sole use of RACP funds. The primary focus of the RACP scope of work should be construction.
 - o The allowance of RACP funds for land acquisition costs is at the discretion of the Office of the Budget. If allowed, RACP funding for acquisition costs is generally limited to no more than 30% of the total grant amount. This 30% maximum allowance includes any land acquisition and/or equipment costs (see below).

- o For land acquisition costs to be reimbursable, the purchase date must occur after the authorization date of the itemized project and have RACP scope construction activity occur on the site.
 - Equipment – if equipment is purchased for the project, documentation of the useful life must be provided.
 - o Equipment costs cannot be the sole use of RACP funds. The primary focus of the RACP scope of work should be construction.
 - o The allowance of RACP funds for equipment costs is at the discretion of the Office of the Budget. If allowed, RACP funding for equipment costs is generally limited to no more than 30% of the total grant amount. This 30% maximum allowance includes any equipment and/or land acquisition costs (see above).
 - o For equipment to be reimbursable, it must be fixed to the realty, have a substantial useful life, and be directly related to the RACP project.
- 2) Non-Reimbursable Cost Categories – All costs below must be directly related to the RACP project. The following costs are eligible match costs only and not allocated for reimbursement with RACP funds. These costs must be paid from non-state matching funds, which may include federal funds.
- Future physical maintenance & operation – a portion of any funds reserved for future physical maintenance and operation of facilities may be included as a part of the 50% match (non-state) participation, provided such funds do not exceed 15% of the total project cost. These reserved funds must have legally binding documentation explaining the intent, design, and operation of the dedicated fund. Salaries cannot be paid from reserve funds.
 - Administrative costs – any fees for the administration of the project, whether by the Applicant’s staff or by contract.
 - Legal fees – any fees for the services of lawyers or solicitors.
 - Financing/Accounting costs – any fees for financing and accounting services.
 - Architectural/Engineering fees – any fees for application preparation, project administration, or other professional services incurred for the planning, design, and construction of the project.

E) Ineligible Projects

Projects located in a City Revitalization and Improvement Zone (CRIZ) and eligible for CRIZ benefits are not eligible RACP projects. However, approved RACP grants that existed prior to zone approval shall not be restricted.

Projects that are generally funded through other state programs are not eligible for Redevelopment Assistance Capital Program funds. Examples of those funding sources and projects are as follows:

Projects funded by PENNDOT or federal government:

- Highways, vehicular bridges, tunnels

Projects funded by PENNVEST:

- Drinking water, wastewater, stormwater and waste disposal facilities

An exception to the above would be; stormwater, water or sewer infrastructure or tunnels, bridges or roads when associated with a project that is part of an economic development project. As an example, RACP funding could be utilized to prepare and install water and sewer lines within an industrial/business park development. Costs associated with repairs or replacement of existing public or private water or sewer systems are not eligible expenditure of RACP funds.

Other state funded projects:

- Housing Units are fundable only when specialized funding specifically for that purpose is approved and remains unused. Acts 87 of 2005 & 82 of 2010 each allowed \$25 million (for a total of \$50 million) for the construction of housing units. Outside of the special allocation housing funding, housing projects are only eligible if they support and generate economic activity and are part of a community revitalization plan.

****If a RACP project does include and require improvements to housing, roads, bridges, tunnels, infrastructure, and/or drinking water / waste / disposal / wastewater / stormwater systems, these improvements must not be the primary focus of the project. Per Act 77 of 2013, they must be associated with a project that is part of an economic development project, and in the case of housing, must be part of a community revitalization plan and in accordance with RACP program requirements. These additional requirements for housing projects are not required if the funding is from a designated special allocation for housing.*

F) Match Funding Requirements

General Requirements - a RACP project must have matching funds that comply with the following:

- 1) At least 50% of the project cost must be match (non-state) participation.
- 2) At least 50% of the match (non-state participation) must be secured funding at the time of formal Project Management Proposal submittal with identifiable and firm commitments from all sources.
- 3) Sources of match funds can be local, private, land or building as-is appraised value, and/or federal funds.
- 4) The only non-cash, non-state match permitted are land or fixed assets, which have a substantial useful life and are directly related to the project.
- 5) Funds from other state sources, including legislative sources may not be used as match.
- 6) If financing/loans are used as match funding they typically must consist of permanent financing (i.e., a minimum term of 10 years). This policy does not apply to bridge or interim financing used in the project.
- 7) Funds (grants and/or loans) from other state sources, including legislative sources, may not be used as match. However, care must be taken not to mistake certain non-state funds as state funds just because they are distributed through a state agency. The disqualifying part is if the source of the funds is from the state. Some non-state (usually federal) funds are passed through a state agency. This pass-through does not make them ineligible to be used as MATCH in a RACP project. For example,

Community Development Block Grants (CDBGs) administered by the DCED is a federal source pass-thru so it is acceptable for use in a RACP project.

- 8) An exception to the prohibition of other state funds being used as match in a RACP project is certain gaming/casino source funds. As of July 1, 2011 (except as noted below), the use of the Gaming Local Share Assessment (LSA) can be used as matching funds for RACP in the following counties:

- Allegheny
- Carbon
- Dauphin (effective October 26, 2017)
- Lackawanna
- Luzerne (effective October 26, 2017)
- Monroe
- Northampton
- Pike
- Washington
- Wayne

Section II – Pre-Award, Grant and Reimbursement Process

A) Pre-Award Process

Candidates who have an authorized and eligible project will need to submit an e-Application to the Office of the Budget during an open funding round.

All submissions that pass an initial review of eligibility and completeness will be considered for a RACP grant award. The Office of the Budget staff will forward a complete listing of projects and summaries to the Administration for grant award consideration.

There is a 30-day “public comment period” after the closing of an e-Application window, which must be completed before awards can be made.

The final selection results will be posted to the website and all successful Candidates will be notified via an Award Letter.

If your capital project is approved by the Office of the Budget, you will receive an Award Letter to submit a formal Project Management Proposal (PMP).

If you did not receive an award letter by the date the Office of the Budget officially closes a funding round, as posted on the website, then you were not selected for an award. You will need to re-apply during a subsequent open funding round.

The award letter provided to each Candidate does NOT affirm eligibility nor compliance with program requirements. Instead, the award letter serves as written notification authorizing the preparation and submission to the Office of the Budget of a formal Project Management Proposal (PMP).

B) Grant Process

Candidates are required to notify the Office of the Budget within 30 days of receipt of an Award Letter as to whether or not they are accepting the grant award. The notification should come from the addressee of the Office of the Budget award letter (Applicant or Sub-Applicant).

Applicants who accept the award are then required to submit a formal Project Management Proposal (PMP) within 6 months of the date of the Award Letter. All RACP projects must submit the PMP through an eligible Applicant.

When the Office of the Budget receives the PMP, it conducts a preliminary review and then assigns a consultant to conduct a thorough assessment of the PMP. The state-assigned consultant then provides the Office of the Budget with a report detailing the assessment. The Office of the Budget reviews the report and prepares the grant agreement, which will contain applicable special conditions.

The proposed RACP scope submitted with this Project Management Proposal will be reviewed and possibly adjusted during the development of a grant agreement to ensure that it meets program requirements.

The grant agreement will be provided to the Grantee for signature. Grantees must execute an RACP Grant Agreement and return the agreement to the Office of Budget (OB) within 20 days of the date of the grant agreement transmittal from OB. If the Grantee fails to return the signed contract within the timelines established by the office, no contract may be executed by the office for the grant, as Act 77 stipulates.

Once it is returned to the Office of the Budget, it will be forwarded to the appropriate agencies within the Commonwealth administration for validation and execution.

A final copy of the executed grant will be provided to the Grantee. It is important to note that the Office of the Budget cannot reimburse on any RACP-compliant costs until a fully executed grant agreement is in place.

Once the grant agreement is fully executed, the Grantee will then have a maximum of six (6) months to meet the terms and conditions of the grant agreement. The Grantee would be qualified to receive reimbursements for paid costs once the construction activities have started and these terms and conditions are satisfactory.

Once construction activities have started, it is advised that the Grantee request a facilitation meeting. These meetings are conducted by the Office of the Budget personnel and are at no cost to the project.

Once the project has incurred eligible reimbursable costs, they may then submit a payment request to start receiving grant funds.

C) Facilitation Meeting

Facilitation meetings are conducted at the request of the Grantee to the Office of Budget. Once construction activities have started, it is advised that the Grantee request a facilitation meeting. The Grantee/Sub-grantee/project representatives are eligible to attend a facilitation meeting at no cost to the project. During these meetings, the Grantee will be able to ask questions concerning administration of the program and its effects on the project, RACP requirements will be discussed, and payment request procedures will be explained.

D) Special Conditions Satisfaction

Once the Grant Agreement is executed; the Grantee will then have six (6) months from the date of execution to provide documentation to satisfy the special conditions located in Appendix B of the grant agreement. The Grantee must submit a packet to address all special conditions identified in the grant agreement to the Office of the Budget.

Office of the Budget staff will review the submission and issue a funds available letter once all special conditions have been fully satisfied.

If the Grantee is not administering the project, a Cooperation Agreement will need to be in place between the Grantee and Sub-grantee (and project administrator) detailing each entities responsibilities and requiring the Sub-Grantee/Administrator to comply with all terms and conditions of the RACP grant agreement.

E) Reimbursement Process

To facilitate the receipt of grant funds, the Grantee must submit a request for payment. The project budget must account for three (3) important stipulations discussed below.

1) Reimbursement Program

The Redevelopment Assistance Capital Program will use a reimbursement system to fund projects. Grantees will apply for periodic project payments to cover a portion of paid eligible and reimbursable project expenses. Expenses must be paid prior to submission to the commonwealth for reimbursement.

This reimbursement will be limited by: a) total funds available through the Funding Accumulation Schedule; b) a proportionate amount of the matching funds expended to date versus RACP grant expenditures; and c) those other limitations that the Office of the Budget may deem necessary.

2) Funding Accumulation Schedule (36-month minimum)

The approved Funding Accumulation Schedule, which is located in Appendix C of the grant agreement, for a project shows the RACP amounts that will be accumulated for the project during the months indicated on the schedule. Generally, total funding will be accumulated in equal installments over a 36-month period unless the Secretary of the Budget authorizes a shorter period.

The use of a Funding Accumulation Schedule may contribute to the Grantee's need to obtain interim or bridge financing to fund the project. Exceptions to this requirement will be made on a case-by-case basis by request. Month one (1) for the period will be the first month after the execution of the Grant Agreement. Commonwealth reimbursements will be limited by the amount of funds accumulated for the project at the time the Payment Request is reviewed. The approved schedule is shown in Appendix C of the Grant Agreement.

The approved funding accumulation does not show a monthly reimbursement that the Grantee will automatically receive for the project. The schedule shows the funds that are available for the project in any month during 36-month accumulation period. The reimbursement that the Grantee is eligible to receive is also subject to the distribution factor.

3) Proportional reimbursement

To ensure that RACP funds are not fully disbursed prior to the completion of a project, RACP grants will be reimbursed on a proportional basis for direct land, building acquisition, construction and

other eligible reimbursable expenses. The proportion funded by RACP funds will be defined by the distribution factor, which is located in Appendix C of the grant agreement. The distribution factor will be the total non-state funding amount divided by the RACP grant. Eligible match costs are not reimbursable but are included in the factor. The proportional reimbursement may contribute to the Grantee's need to obtain interim or bridge financing to fund the project.

The distribution factor is a measure of the match participation with respect to RACP participation. The factor is calculated as follows:

Distribution Factor = Total Match Funds / RACP Grant.

A distribution factor of 2 indicates that for every \$2 of match participation, there will be \$1 of commonwealth participation. In other words, the commonwealth is providing \$1 of grant for every \$3 of total project cost.

The purpose of the distribution factor is to insure that the Grantee is contributing the required match components to the project as reimbursements are being provided. Generally, the distribution factor will control the amount of reimbursement, if there are sufficient funds accumulated per the funding accumulation schedule.

A Payment Request must include paid construction costs before any other items will be reimbursed. Therefore, if construction has not started, the Commonwealth will not reimburse on acquisition, permits, or interest costs.

The submission of completed, signed Payment Request (PR) forms and supporting documentation must be sent to the Office of the Budget. Aside from the facilitation meeting, a Reimbursement Handbook is available, to assist you in preparing the PR forms for submission.

Office of the Budget staff will 1) assess satisfaction of all terms and conditions of the grant; 2) verify compliance with all RACP program requirements; and 3) examine the PR forms and all supporting documentation.

The state-assigned consultant will issue Construction Monitoring Reports periodically, which will be used to assist the Office of the Budget staff in their assessment.

The PR forms will be sent to Treasury through Comptroller Operations for the release of grant funds when:

- special conditions (Appendix B of the Grant Agreement) have been fully satisfied via a letter from the Office of the Budget,
- all other terms and conditions of the grant are satisfactory,
- compliance with program requirements is verified, and
- the payment request forms are acceptable.

F) Project Monitoring

Projects will be monitored by the Office of the Budget or its state-assigned consultant(s) throughout the funding and construction phase. All projects will be subject to review. Prior to the initiation of monitoring, the Grantee will be notified, a monitoring schedule will be established, and procedures will be explained.

The Grantee is responsible for fully executing a successful Redevelopment Assistance Capital Program project by approving and executing any designs, plans, specifications, estimates, or other components related to the development and execution of the project and reviewing/examining for accuracy or compliance with any federal, state, or local regulations. During monitoring, the commonwealth will not be approving any actions related to the grantee's execution of the project.

The Grantee is responsible for compliance with any or all federal, state, and local requirements.

The Grantee is responsible for putting together a project team which should consist of personnel and designated parties that can provide administrative, financial, engineering, legal, and other necessary expertise necessary to execute the project.

Approval of reimbursements of state funds will depend on financial and program compliance. The intent of monitoring is to review financial and program compliance with the Redevelopment Assistance Capital Program.

G) Close Out Audit

A close-out audit will be performed by the Office of the Budget staff for all projects. The Grantee will not be required to pay for this audit.

A portion of the final grant proceeds shall be retained by the Office of the Budget until the completion of the statutorily-required final close out audit. The commonwealth may withhold up to 10% of the grant value from the final Payment Request. This percentage may be reduced at the discretion of the Office of Budget.

Generally, the Grantee, among other things, is required to:

- Maintain books, records, documents, correspondence and evidence pertaining to the costs and expenses to the project funded with the Grant Agreement.
- Retain records for a period ending the late of 1) seven (7) years after final payment is made by the Grantee with funds awarded via the Grant Agreement; 2) seven (7) years after the Grant Agreement has expired; or 3) seven (7) years after the effective date of any termination of the Grant Agreement.
- Provide access to Commonwealth auditors or its representatives during the term of the Grant Agreement and after as specified in the Grant Agreement for record retention.
- Repay to the Commonwealth with interest amounts that were expended on ineligible costs, unless otherwise directed in writing by the Office of the Budget.

H) Definitions and Acronyms

Itemization: A line item included in a PA Capital Budget Project Itemization Act, that authorizes a project for funding.

Candidate: Any entity that has an authorized eligible project and, subsequently, has submitted an e-Application, but has not received an award or rejection letter.

e-Application: Pre-Award application for grant funding submitted through the electronic single application.

Applicant: An eligible entity that has received a RACP award letter and, subsequently, has submitted a formal Project Management Proposal. It may be the candidate itself, or if they are not an eligible applicant, a separate “sponsor” entity selected by the candidate.

Sub-Applicant: In cases where a RACP candidate is not an eligible applicant, the candidate becomes the sub-applicant and selects an eligible applicant to “sponsor” them and submit the formal Project Management Proposal.

Project Management Proposal (PMP): Post-Award application which details the proposed project scope and match funding, this is used to develop the grant agreement.

Grantee: An applicant that meets eligibility requirements and has received a grant agreement for execution.

Sub-Grantee: An entity that, through the cooperation of a grantee, will use RACP funds for an eligible project.

Special Conditions (SC): Items identified during the development of a grant agreement that require additional supporting documentation, located in Appendix B of the grant agreement.

Payment Request (PR): Submission, including invoices and proof of payments, to request grant funds for the reimbursement of paid project costs.

Funding Accumulation Schedule: Shows the RACP amounts that will be available for reimbursement during the months indicated on the schedule, located in Appendix C of the grant agreement.

Distribution Factor: A measure used to control the amount of reimbursements, to insure that the Grantee is contributing the required match components to the project. The factor is calculated as Total Match Funding divided by RACP Grant, located in Appendix C of the grant agreement.

State-assigned consultant: Firm employed by the commonwealth to monitor and report on RACP construction projects.

Redevelopment Assistance Capital Program (RACP)



Key Compliance Guidelines

November 2024

KEY COMPLIANCE GUIDELINES

It is suggested that a copy of this complete document be given to your Project, Construction Manager, and/or Architect so that they are fully aware of the RACP requirements related to each. This document should be included in your bid packages and should be made an addendum to any and all construction contracts, plans and specifications related to the RACP project.

Compliance with all RACP requirements, including the key items in these guidelines will be monitored frequently throughout the construction phase of your project and will be reviewed once more during the legislatively mandated close-out audit.

COMPETITIVE BIDDING REQUIREMENTS

The sole and exclusive bidding requirement for RACP projects is in the Capital Facilities Debt Enabling Act (Act 67 of 2004), which states "Notwithstanding any other provision of law, the solicitation of a minimum of three written bids for all contracted construction work on redevelopment assistance capital projects shall be the sole requirement for the composition, solicitation, opening and award of bids on such projects." Unless the terms of the law change, the Office of the Budget cannot grant waivers for bidding requirements to Grantees.

RACP projects are not subject to separation of trades. You are REQUIRED to solicit a minimum of three (3) bids for "all generally contracted work" being performed within the RACP defined scope of work. You are not required to receive three (3) bid responses. However, you should provide documentation to prove that at least three bids were solicited by providing copies of the solicitation letters (preferably on letterhead of the bidding entity) used in the bidding process. You are not required to select the lowest bidder, but if you do not, you will have to provide a brief written justification for your selection. Note: there is NO threshold level under the RACP program regardless of the size or dollar amount associated with the work to be performed. You need to show that you solicited a minimum of three (3) bids for any contract to be eligible for RACP.

Bidding is acceptable at either the general contractor level (described in option a. below) or at the sub-contractor level (described in option b. below):

- **General Contractor (GC) Level** - If you chose to bid at the GC level, please note that the bid should encompass the entire RACP scope of work to be performed including all associated construction work. The dollar amount bid on the project must include 100% of the work to be performed by the GC and the sub-contractors. Bidding at the GC level will require submission of bidding and construction related documents at the GC level only (see Sub-Contractor level below for a distinction)
- **Sub-Contractor Level** - If you choose not to solicit three bids for a General Contractor, then you are required to solicit a minimum of three bids for EACH Sub-Contractor covering all trades involved in the project. Note that any self-performed work by a non-bid GC is NOT an eligible cost for reimbursement OR match purposes. Bidding at the Sub-Contractor level will require submission of bidding and construction related documents at the sub level...meaning proof of

bidding, construction contracts, payment and performance bonds, insurance etc. will need to be provided for every sub-contractor in the RACP scope.

Professional Services: Professional services associated with the project are not required to be bid as these associated costs are only eligible as match.

Change Orders: Grantees and/or Sub-Grantees are not required to competitively bid out change orders as long as the work was within the RACP scope of the original bid and is less than 20% of the total contract. If a change order is for work beyond the RACP scope of work originally bid, the Grantee will be required to competitively bid out the new scope of work in order to be considered RACP eligible.

PENNSYLVANIA STEEL PRODUCTS PROCUREMENT ACT

The Office of the Budget (OB) cannot grant waivers to the Pennsylvania Steel Products Procurement Act (SPPA) unless the terms of the law change. All RACP Grantees must comply with the SPPA. If a Grantee/RACP project fails to abide by the SPPA, it does so at its own risk.

[A full explanation on the RACP steel requirements is available as a PDF download.](#)

Up to 2011, OB only accepted the ST-4 Form (justification for the use of foreign steel) that the Department of General Services (DGS) had exclusively devised to address exceptions linked to the requirements of the SPPA, when it was necessary. Since 2011, OB has approved the acceptability of two more DGS ST Forms (ST-2, ST-3) with some caveats, providing that the forms are properly filled out. The ST-1 Form will not be accepted by OB. It is not necessary for the ST-2, ST-3, and ST-4 Forms to be notarized.

Since 2013, OB has utilized the DGS Exempt Machinery and Equipment Steel Products listings as part of the RACP steel policy. DGS published a Statement of Policy - Steel Products Procurement in the Pennsylvania Bulletin Volume 43, Number 6 dated February 9, 2013 (See PA Bulletin #43, pages 85-86) that discussed their production of an annual list, based on their analysis of submitted ST-4 forms, which exempts certain steel products not produced domestically in sufficient quantity. DGS publishes an updated "Exemption List" annually.

Please be aware that ST forms are acceptable only in cases where nonstructural steel needs to be addressed. The DGS ST forms do not replace the steel certification forms associated with structural steel. OB will continue to require the submission of steel mill certifications to demonstrate compliance with the steel requirements for structural steel.

The PDF copies of the three acceptable ST Forms for RACP listed below can be obtained from the RACP website:

- [ST-2 Steel Origin Certification: Non-Identifiable, Non-Structural Steel](#)
- [ST-3 75% U.S. Manufacture Certification](#)
- [ST-4 Not Domestically Manufactured: Prime Contractor](#) (only to be used when requesting items to be exempted that are not found on the current year's List of Exempt Machinery and Equipment Steel Products)

It is suggested that the certifications be collected at the time any steel for the project is purchased and delivered to ease the collection process.

Be advised that OB DOES NOT need to approve the ST forms prior to the start of the construction period. The ST forms need to be submitted to demonstrate that compliance, when and where necessary, has been met.

We shall deem as ineligible all contracts that are unable to demonstrate compliance via the submission of steel certifications for Structural Steel and for Non-structural Steel the submission of steel certifications and/or ST forms and/or DGS Exempt Machinery and Equipment Steel Products List. Therefore, the value of construction contracts associated with non-compliant steel will be removed (both materials and labor costs) from the scope of the project, which may in turn affect the project's ability to leverage their full grant amount (project may not receive its full grant).

Recycled products, melted from previously used steel, are acceptable, providing that adequate documentation from the supplier has been furnished. The supplier shall certify that the recycled steel product was produced in the USA.

TRADE PRACTICES ACT

In accordance with the Trade Practices Act of July 23, 1968, P.L. 686 (71 P.S. § 773.101 et seq.), the Grantee cannot and shall not use or permit to be used in the work any aluminum or steel products made in a foreign country which is listed below as a foreign country which discriminates against aluminum or steel products manufactured in Pennsylvania. The countries of Argentina, Brazil, South Korea, and Spain have been found to discriminate against certain products manufactured in Pennsylvania. Therefore, the purchase or use of those countries' products, as listed below, is not permitted:

- **Argentina:** carbon steel wire rod and cold-rolled carbon steel sheet.
- **Brazil:** welded carbon steel pipes and tubes; carbon steel wire rod; tool steel; certain stainless steel products, including hot-rolled stainless steel bar; stainless steel wire rod and cold-formed stainless steel bar; pre-stressed concrete steel wire strand; hot-rolled carbon steel plate in coil; hot-rolled carbon steel sheet; and cold-rolled carbon steel sheet.
- **South Korea:** welded carbon steel pipes and tubes; hot-rolled carbon steel plate; hot-rolled carbon steel sheet; and galvanized steel sheet.
- **Spain:** certain stainless steel products, including stainless steel wire rod, hot-rolled stainless steel bars; and cold-formed stainless steel bars; pre-stressed concrete steel wire strand; and certain steel products, including hot-rolled steel plate, cold-rolled carbon steel plate, carbon steel structural shapes; galvanized carbon steel sheet, hot-rolled carbon steel bars, and cold-formed carbon steel bars.

Penalties for violation of the above paragraphs may be found in the Trade Practices Act, which penalties include becoming ineligible for public works contracts for a period of three years.

This provision in no way relieves the Grantee of responsibility to comply with those provisions which prohibit the use of foreign-made steel and cast iron products.

PUBLIC WORKS CONTRACTORS' BOND LAW (PAYMENT & PERFORMANCE BONDS)

The requirement for 100% payment and performance (P&P) bonds is a state law; the Office of the Budget cannot waive this requirement.

A performance bond must be obtained at 100% of the contract amount, conditioned upon the faithful performance of the contract in accordance with the plans, specifications, and conditions of the contract. Such bond shall be solely for the protection of the contracting body which awarded said contract.

A payment bond must be obtained at 100% of the contract amount. Such bond shall be solely for the protection of claimants supplying labor or materials to the Grantee, its contractor or to any of its subcontractors, in the prosecution of the work provided for in such contract, and shall be conditioned for the prompt payment of all such material furnished or labor supplied or performed in the prosecution of the work. "Labor or materials" shall include public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the site.

PA PREVAILING WAGE ACT (PWA)

The Office of the Budget cannot grant waivers for the PA Prevailing Wage Act. All Grantees must comply with the act. Grantees that fail to abide by the Prevailing Wage Act do so at their own risk. Please do not assume that PA Prevailing Wage is always consistent with your local union wages.

All projects should apply for a wage determination letter prior to the start of construction by registering the project with the PA Department of Labor and Industry to obtain the prevailing wage rates relevant to your project. This determination sheet will provide the necessary trade classifications for the project, along with their corresponding hourly wage and hourly fringe rates that are required for the certified payrolls required as part of RACP. The wage determination should be obtained within 120 days of the award of construction contracts. If necessary, the Department of Labor and Industry can issue determinations letters after construction has begun.

The prevailing wage information and forms can be found on the [PA Department of Labor & Industry website](#).

AMERICANS WITH DISABILITIES ACT (ADA)

Typically your architect should provide a letter stating the plans and specs are in compliance with ADA regulations. Additionally, the Grantee agrees to comply with the General Prohibitions Against Discrimination, 28 C.F.R. § 35.130, and all other regulations promulgated under Title II of The Americans with Disabilities Act which are applicable to all benefits, services, programs, and activities provided by the commonwealth through contracts.

FIDELITY BONDS

The Grantee shall procure and furnish evidence to OB, of fidelity bonds with coverage to be maintained under the administrative title of the position, in amounts and for such positions as are reasonably determined by OB. Fidelity Bonding is also commonly known as "Employee Dishonesty Insurance."

Grantees should submit certificates of insurance to support fidelity bond coverage is in effect and the coverage amount meets or exceeds the RACP grant amount, or the coverage amount meets or exceeds the monthly project funding schedule contained in Appendix C of the grant agreement. For Grantees with multiple projects and/or grants larger than \$5,000,000 the coverage amount can be the lesser of either \$1,000,000 or 20% of the RACP grant amount(s).

INSURANCE REQUIREMENTS

- Worker's Compensation Insurance - The Grantee shall provide Worker's Compensation Insurance where required, and shall accept full responsibility for the payment of premiums for Worker's Compensation Insurance and Social Security, as well as income tax withholding and any other taxes or payroll deductions required by law for its employees who are performing services related to the project.
- General Liability & Property Damage Insurance - The Grantee will provide and maintain comprehensive general liability and property damage insurance in the minimum amount of \$250,000.00 per person for injury and death in a single occurrence; \$1,000,000.00 per occurrence for injury or death of more than one (1) person in a single occurrence; and \$500,000.00 for a single occurrence of property damage, and which shall be endorsed to protect the commonwealth.
- Flood Insurance – If the project is wholly or partially within a floodplain, proof of sufficient flood insurance coverage must be provided. In any case, a project is required to provide a copy of a floodplain map of the project area, with the project site being delineated thereon.

Identify Commonwealth as Additional Insured: The commonwealth shall be listed on the above insurance policies as an additional insured. Upon request, the Grantee shall furnish proof of insurance as required by this section to OB.

RESTRICTIONS ON GOVERNMENTAL ENTITIES SELLING RACP PROJECTS

Article 8 of the RACP Grant Agreement spells out sale price restrictions for a governmental entity that sells property that was acquired and/or improved with RACP funds. The restrictions are required to insure that the Grantees CANNOT sell the property for a net gain or even recoup the value of the grant in the sale price. [A PDF download is available that contains more information on Article 8.](#)

Redevelopment Assistance Capital Program (RACP)



Frequently Asked Questions

November 2024

FREQUENTLY ASKED QUESTIONS

The following are frequently asked questions by Redevelopment Assistance Capital Program (RACP) Partners on RACP related projects.

[Section 1 – Eligibility/Scope](#)

[Section 2 – Pre-Award/e-RACP Application](#)

[Section 3 – Post-Award/Project Management Proposal](#)

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[Section 5 – Grant Agreement](#)

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[Section 7 – Reimbursement](#)

[Section 8 – Compliance/Bidding/PWA/Steel/etc.](#)

[Section 9 – Risk and Compliance](#)

Section 1 – Eligibility/Scope

1. **WHAT TYPE OF GRANTEE IS RACP-ELIGIBLE?** Grantees must be either (1) a general-purpose form of local government unit (city, borough, township or county), (2) any public authority, (3) a federally designated Local Development District or (4) an industrial development agency, which has been certified as such by the Pennsylvania Industrial Development Authority (PIDA) board and which is itself or is acting through a wholly owned subsidiary exempt from federal taxation under section 501 (c) (3) of the Internal Revenue Code of 1986. The Grantee must follow strict guidelines to avoid jeopardizing the tax-exempt status of the bond funding.
2. **IS A SCHOOL DISTRICT AN ELIGIBLE GRANTEE?** A school district, which is a "special purpose of local government," would not be eligible because RACP Grantees must be authorities or "general-purpose forms of local government." (See the answer to Question 1 above.) However, a school district can be the Sub-Grantee of an eligible Grantee.
3. **DURING THE APPLICATION PROCESS, THE AGENCY THAT RECEIVED THE AUTHORIZATION FOR THE PROJECT WAS DISSOLVED AND ANOTHER ORGANIZATION PICKED UP THE PROJECT. MAY THE NEW ORGANIZATION USE THE RACP FUNDS TO COMPLETE THE PROJECT?** It depends on the circumstances of the dissolution. The Office of the Budget will treat such situations on a case-by-case basis. For instance, if the dissolution resulted in an acquisition or a merger, the project can be pursued.
4. **WHAT TYPE OF PROJECT IS RACP ELIGIBLE?** A project is eligible for a RACP grant if it has a cultural, civic, recreational, historical, regional, or multi-jurisdictional impact and generates substantial increases in employment, tax revenues or other measures of economic activity.
5. **WHAT TYPE OF PROJECT IS NOT RACP-ELIGIBLE?** Projects that are state-funded; facilities or projects that can normally obtain primary funding under other state programs; projects whose main purpose is for highways (including road and street improvements) and vehicular bridges, drinking water and wastewater facilities, housing units and waste disposal facilities are not eligible for RACP grants. If an RACP project does include and require improvements to housing, roads, bridges, tunnels, infrastructure, and/or drinking water/waste disposal/wastewater/stormwater systems, these improvements must not be the primary focus of the project. Per Act 77 of 2013, they must be associated with a project that is part of an economic development project; and in the case of housing, must be part of a community revitalization plan. These additional requirements for housing projects are not required if the funding is from a designated special allocation for housing. Projects located in a City Revitalization and Improvement Zone (CRIZ), and eligible for CRIZ benefits, are not eligible RACP projects. However, approved RACP grants that existed prior to zone approval shall not be restricted.
6. **IS THERE A MINIMUM THRESHOLD FOR A RACP PROJECT?** The statutes governing the RACP program require a minimum threshold of \$1 million for each project before it can be funded.
7. **WHAT IS THE IMPORTANCE OF THE CAPITAL BUDGET PROJECT ITEMIZATION BILL TO MY PROJECT?** All grants awarded through RACP MUST be for projects included in one or more of the Capital Budget Project Itemization Acts passed by the General Assembly and signed into law by the Governor. You will need to 1) identify the appropriate Act(s) for which your project has been itemized and 2) verify that sufficient funding remains from said itemization in order to submit an e-RACP Application to RACP for consideration and evaluation of your project. Only

itemizations/projects from these Acts that have remaining "Project Allocation" amounts and that have not been statutorily "sunset" in accordance with Act 77 are eligible. No project expense paid prior to the project's Capital Budget Itemization Act's effective date is usable as a reimbursable and/or match item for the RACP project (excluding land match).

- 8. OUR COMMISSIONERS HAVE A SALES AGREEMENT IN PLACE WITH A DEVELOPER AND WOULD LIKE TO PURCHASE A PARCEL OF LAND. MAY WE USE THE RACP GRANT TO BUY THE PROPERTY WHILE WE DECIDE WHAT TO BUILD ON IT?** The statutes governing the RACP grant program permit the use of RACP proceeds for land acquisition; however, this cannot be the entire scope of the RACP grant. Some of the grant funding must be used for construction activities. The Office of the Budget cannot reimburse on land only, without any construction work.
- 9. MY CONSTRUCTION PLANS HAVE CHANGED SINCE I SUBMITTED MY PROJECT MANAGEMENT PROPOSAL. WHAT DO I NEED TO DO?** Changes to the project scope presented in the Project Management Proposal will be reviewed during the grant and scope development stage. If the change in scope is identified after the grant agreement has been fully executed the project will need to submit a rescope request to the Office of the Budget for review. It is not guaranteed that a revised scope will be approved by the Office of the Budget.
- 10. ARE "ELIGIBLE COSTS" THOSE INCURRED AFTER THE LEGISLATIVE AUTHORIZATION DATE OR AFTER RECEIPT OF THE AWARD LETTER?** Costs are eligible after the legislative authorization date, assuming the costs meet all RACP requirements (bidding, prevailing wage, etc.). Your award letter included the Itemization Act number and the year your project received legislative approval. Your authorization date by month, day and year is listed in your Grant Agreement in Appendix B.
- 11. MAY I MAKE A COMPLEX RACP PROJECT SIMPLER?** The Office of the Budget may allow this in instances where certain items can be carefully carved out to make a streamlined project. In doing so, you must remember that the simplified project must obey the spirit of the law, in that construction activities must occur and full compliance with our requirements must be met. All changes in scope need to be sent in writing to the Office of the Budget for review and approval.
- 12. CAN MY RACP SCOPE BE LIMITED TO ONLY LAND ACQUISITION COSTS?** The Capital Facilities Debt Enabling Act defines a redevelopment assistance capital project as the 'design and construction of a project.' Therefore, the primary focus of all RACP projects should be on construction. The Office of the Budget cannot reimburse on land only, without any construction work. The allowance of RACP funds for land acquisition costs is at the discretion of the Office of the Budget, if allowed, RACP funding for acquisition costs is generally limited to no more than 30% of the total grant amount. This 30% maximum allowance includes any land acquisition and/or equipment costs. For land acquisition costs to be reimbursable, the purchase date must occur after the authorization date associated with the itemized project and have RACP construction activity occur on the site.

Section 2 – Pre-Award/e-RACP Application

- 1. HOW DO I APPLY FOR A RACP AWARD?** The Candidate must submit an e-RACP Application to the Office of the Budget during an open Funding Round. The Candidate should refer to the Funding Round Schedules on the RACP website and choose the round that will be closest to the

anticipated start date of the project construction. All e-RACP applications must be submitted using the electronic single application (ESA) website.

2. **WHEN ARE THE RACP FUNDING ROUNDS OPEN?** Funding Rounds are opened and closed at the discretion of the Governor. The RACP website will be updated to provide notice of when a new round will be open.
3. **HOW DO I CHOOSE AN ITEMIZATION?** When choosing an itemization to apply for a RACP award look for the following items:
 - Locate the county that the project site is located.
 - Verify that the entity/location noted in the municipality column corresponds to the site location and/or is directly related to the project.
 - Verify that the Act's LAD Date is prior to any incurred project costs.
 - Verify the Act's Project Description fits your project scope.
 - Verify that the act has a remaining available act amount equal to or greater than the amount of funding being requested.
4. **HOW DO I GET MY PROJECT ADDED TO AN ITEMIZATION ACT?** Potential projects are added to Capital Budget Project Itemization Bills by members of the House of Representatives, Senate, and Administration.
5. **HOW WILL I KNOW IF MY PROJECT WAS SELECTED FOR AN AWARD?** All recipients of RACP funding will be notified via an Award Letter sent to the contact person noted in the e-Application. The Award Letter will provide further instructions on the RACP grant process.

Section 3 – Post-Award/Project Management Proposal

1. **WHAT IS A PROJECT MANAGEMENT PROPOSAL?** This is a new streamlined post award application that replaces the prior formal Application and Business Plan (A&BP). Any funding recipient that has not yet submitted a formal Application and Business Plan should now complete a Project Management Proposal (PMP) for the project. The PMP submission would supersede the need to submit the formal A&BP.
2. **WE HAVE RECEIVED AN AWARD LETTER FOR THE RELEASE OF FUNDING FOR OUR RACP PROJECT. WHAT DO WE NEED TO DO TO OBTAIN THE FULL GRANT AMOUNT?** After the release of funding for a RACP project is approved, the Office of the Budget issues an Award Letter to serve as written notification authorizing the preparation and submission to the Office of the Budget of a post award application for the project. Grant Recipients are required to notify the Office of the Budget within 30 days of receipt of an Award Letter as to whether or not they are accepting the grant. The Project Management Proposal (PMP) contains sections that must be addressed, including the match amount, budget, and detailed sources of funding. A Project Management Proposal Template can be downloaded from the RACP website, in addition a Project Management Proposal Handbook can be downloaded from the RACP website and contains the necessary instructions for the preparation of the PMP. The Project Management Proposal must be submitted in electronic format (PDF) via upload to an RACP FTP site. The eligible Applicant/Grantee designated for the project will be emailed a unique Username and Password to access this FTP site within approximately 3 weeks of receiving the Award Letter.

3. **GIVEN THE DIRECTIVE REGARDING THE FILING OF THE PROJECT MANAGEMENT PROPOSAL WITHIN SIX MONTHS OF THE AWARD LETTER, WILL THE FUNDING BE TERMINATED FROM A PROJECT EVEN IF AN EXTENSION REQUEST HAS BEEN SUBMITTED BEFORE THE DEADLINE?** The Office of the Budget must receive the Project Management Proposal within six months of the date of the Award Letter. If the Grantee fails to submit the Project Management Proposal within the allotted time frame, funding for the project may be terminated.
4. **I HAVE SUBMITTED MY PROJECT MANAGEMENT PROPOSAL. WHAT HAPPENS NEXT?** Once the Office of the Budget receives a Project Management Proposal, the Office of the Budget conducts a preliminary review and hires a consultant to conduct an exhaustive review. A consultant will contact you to set up the Project Management Proposal review. After the consultant completes the review, he or she sends a report to the Office of the Budget. The Office of the Budget is then able to draft the agreement between the Commonwealth and the Grantee.

Section 4 – Match Funding/Interim Financing

1. **MAY WE USE OUR MORTGAGE AS A MATCH FUNDING SOURCE?** Generally, the Office of the Budget allows mortgages to be used as match funding as long as adequate supporting documents are available. The adequacy of any document is at the discretion of the Office of the Budget. We would be looking for terms of at least 10 years on any financing instruments.
2. **WHAT ARE THE REQUIREMENTS FOR HAVING THE MATCH FUNDING SECURED?** One-half (50%) of the match funding must be secured at the time of the Project Management Proposal submission and before the grant agreement is drafted. After the grant agreement has been drafted, the Applicant/Grantee must document that 100% of the match funding is readily available before the Office of the Budget will start the reimbursement process. Signed pledges that are not yet received may count as the secured match only before the grant agreement is drafted. After that, evidence of the availability of the match (a cash receipt) must be demonstrated. Loans intended for match funding must be in the form of a long-term financing instrument.
3. **WHY MUST LOANS INTENDED FOR MATCH FUNDING BE IN THE FORM OF A LONG-TERM FINANCING INSTRUMENT?** The Capital Facilities Debt Enabling Act requires that RACP projects be funded from proceeds of Commonwealth of Pennsylvania General Obligation (GO) bonds. GO bonds issued to finance the RACP grant program have a publicized maturity term of 10 years. Consequently, when a RACP Grantee uses loans as match funding, they must have a maturity cycle that demonstrates the long-term viability of the project. Past experiences have shown that RACP projects that use loans as match funds are in a better position to withstand economic downturns when those loans are in the form of a long-term financing instrument.
4. **MAY WE USE A SIX-MONTH LINE OF CREDIT AS A MATCH FUNDING SOURCE?** A six-month line of credit is not viewed as long-term financing; therefore, it would be ineligible for RACP matching purposes. Loans used as match funding should be in the form of a long-term financing instrument.
5. **WE HAVE A SHORTFALL. MAY I USE MY LINE OF CREDIT AS A SECURED FINANCING INSTRUMENT FOR THE MATCH PORTION OF THE PROJECT?** Asking the Office of the Budget to recognize lines of credit or a business line as secured financing for the shortfall on a project is not satisfactory.

The Office of the Budget accepts lines of credit as sources of interim financing but not as secured match funding.

6. **WHAT IS THE PURPOSE OF INTERIM FINANCING?** All RACP projects are required to have permanent match funding in place for the match costs associated with that particular project. RACP is a reimbursement-based program. Consequently, a project will need to have interim financing in place to pay for monthly construction expenses before it can receive the RACP grant. Interim financing is also needed to bridge the gap between the time a Payment Request is submitted and the time a payment is disbursed. Please refer to the Grant Agreement and Drawdown section above for more information on the payment processing time.
7. **MAY THE ENTIRE MATCH BE LAND?** The appraised value (see below Question #8 for appraisal requirements) of land and buildings may typically serve as part of the match. The Office of the Budget would need to know the full cost of the project before saying land may be the sole match. Acceptance of land as the entire match would be at the sole discretion of the Office of the Budget. Any time that land is used in part or in total for the match, the grant recipient should own the property that is being listed as the match and would need to supply a copy of the title or deed. No lien is placed on the deed by the Office of the Budget.
8. **WHAT DO I NEED TO PROVIDE TO SHOW THE VALUE OF LAND TO BE USED AS MATCH?** Land match valuation is legislatively required to be supported by a “certified appraisal”. The certified appraisal needs to include the sales comparison method as at least one of the methods used by the appraiser to compute an “as-is” value. The “as-is” value should be before/without including any of the RACP scope of work in the valuation. If the RACP scope of work was started and/or completed before the valuation is computed, then a “retroactive” certified appraisal would be required.
9. **MAY FEDERAL OR MUNICIPAL FUNDS BE USED AS THE MATCH FUNDING SOURCE?** Yes, federal and local funds that are specifically earmarked for the project may serve as the match. Certain federal tax credits may also be used as the match. The statutes governing the RACP grant program do not allow the leveraging of other state funds within the confines of the RACP-defined project. Therefore, all other state funds must be removed from the project scope.
10. **OUR AWARD IS FOR \$2 MILLION, BUT OUR SPECIAL CONDITIONS STATE THAT WE NEED TO DOCUMENT SECURED MATCH FUNDING OF \$4 MILLION. WHY DO WE NEED TO DOCUMENT A MATCH FOR MORE THAN THE \$2 MILLION GRANT AMOUNT IF THE TOTAL PROJECT AMOUNTS TO \$6 MILLION?** You are required to document any and all of the match funding necessary to complete the project. Your total project cost is \$6 million, and the grant is \$2 million; therefore, you would need to document a match of \$4 million, which is the balance of the project cost. The Office of the Budget wants to make sure that you have enough non-state funding to complete the project. In essence, the total project cost minus the RACP grant amount is the amount you need to document for the match.
11. **WE DO NOT HAVE ANY MATCHING FUNDS. CAN YOU WAIVE THIS REQUIREMENT TO FACILITATE THE RECEIPT OF THE STATE GRANT?** The requirement for matching funds cannot be waived. The RACP program requires that one-half (50%) of the match funding be secured at the time of the Project Management Proposal submission and before the grant agreement is drafted. Therefore, without matching funds, there is no RACP grant. The RACP grant operates on a proportional reimbursement basis. As the Grantee incurs and pays construction expenses, the Commonwealth will reimburse – contingent upon the corresponding expenditure of match funding.

12. **THERE IS THE POSSIBILITY OF IN-KIND SERVICES FOR OUR PROJECT. FOR EXAMPLE, ONE OF THE CONTRACTORS AGREED TO DO SOME WORK AT NO CHARGE. MAY WE COUNT THE FAIR VALUE OF IN-KIND GIFTS TOWARD OUR MATCH?** While it would clearly be beneficial to a RACP project to have such a donated gift, it cannot count toward the match, since all work must comply with the stated conditions, such as being contracted for and bid out and paying the prevailing wage.

Section 5 – Grant Agreement

1. **HOW IS MY GRANT AGREEMENT VALIDATED AND EXECUTED?** The draft grant agreement, including any applicable special conditions, is sent to the Grantee for signature. Once it is signed and returned to the Office of the Budget, it is circulated within the Commonwealth for validation and execution, a procedure that typically lasts from eight to ten weeks. The signatories are the Secretary of the Budget; the Office of the Budget’s Chief Counsel; the Deputy General Counsel; the Deputy Attorney General; and the Comptroller.
2. **WHAT IS THE AVERAGE TIME TO HAVE THE GRANT AGREEMENT EXECUTED?** In most cases, after receiving the signed grant agreement from the Grantee, it can be executed within ten (10) to twelve (12) weeks of receipt of the Project Management Proposal review report.

Section 6 – Special Conditions (Appendix B)

1. **WHAT ARE "SPECIAL CONDITIONS"?** Special conditions are additional documentation that Grantees must submit in order to receive any grant funding. The special conditions are located in Appendix B to the grant agreement.
2. **HOW DO I SATISFY MY SPECIAL CONDITIONS?** After the grant agreement is fully executed, a six (6) month time period is set to submit documentation to satisfy the special conditions. Grantees must submit the original special conditions documentation to the Office of the Budget and send a copy to the state consultant assigned to their project. Transmittal letters should be included with all submissions of documents to the Office of the Budget and the consultant. All transmittals should reference the contract number found on the first page of the executed Grant Agreement.
3. **CAN I SUBMIT MY SPECIAL CONDITIONS PACKET ELECTRONICALLY?** All submissions of Special Conditions Documents must be done via upload to RACP’s specified FTP site. The eligible Applicant/Grantee designated for the project should have been emailed a unique Username and Password to access the RACP FTP site after receiving their award letter. Special Conditions are outstanding documentation that is required to be submitted prior to an entity being eligible to receive grant funds. They are found in Appendix B of a typical RACP Grant Agreement. Please refer to Project Management Proposal Handbook for information on how to access the RACP FTP site. Note: Please upload the documents to the “Special Conditions” sub-folder at this stage of the grant process.
4. **MY SIX-MONTH TIME PERIOD FOR SUBMITTING DOCUMENTATION TO SATISFY THE SPECIAL CONDITIONS IS NEARING, CAN I OBTAIN AN EXTENSION?** You can submit an extension request to the Office of the Budget stating the need for the extension, the reason(s) why the original deadline could not be met and your current project status. The Office of the Budget will review

your request and, if significant progress has been made, may grant an extension. You will receive written notification if such an extension is granted.

5. **ONE OF MY SPECIAL CONDITIONS REQUIRES A COOPERATION AGREEMENT TO BE SUBMITTED FOR REVIEW AND SUBSEQUENT APPROVAL. IS THERE A COOPERATION AGREEMENT TEMPLATE AVAILABLE?** Due to the unique relationship associated with the parties executing a Cooperation Agreement, the Office of the Budget (OB) is unable to provide a template that would accommodate the uniqueness of each RACP project. The agreement should outline the responsibilities of each party and include the following four elements: 1) RACP project name; 2) ME 300-xxxx; 3) RACP grant award amount; and 4) an indication that the Sub-Grantee(s) will comply with the terms and conditions of the RACP Grant Agreement and Redevelopment Assistance program. Please note that dependent on your project's situation, OB may request additional elements be added.
6. **I HAVE JUST RECEIVED MY GRANT AGREEMENT WITH THE SPECIAL CONDITIONS LISTED. I HAVE ALREADY INCURRED CONSTRUCTION COSTS FOR REIMBURSEMENT. MAY I SUBMIT A PAYMENT REQUEST BEFORE MY SPECIAL CONDITIONS ARE SATISFIED?** You may submit your Payment Request forms while you are still submitting documentation and waiting for special conditions to be approved by the Office of the Budget. We can begin to process both items simultaneously. Please keep in mind, however, that no grant payment can be released until the special conditions have been satisfied, the compliance requirements have been met, and the Payment Request has been reviewed and accepted by the Office of the Budget.

Section 7 – Reimbursement

1. **MY SPECIAL CONDITIONS HAVE BEEN SATISFIED, AND I SUBMITTED MY FIRST PAYMENT REQUEST. NOW WHAT HAPPENS?** When reviewing a Payment Request, Office of the Budget looks at the Payment Request forms, the verifying documentation for appropriate cost categories, and the latest construction monitoring report from the Commonwealth assigned consultant. No funds can be released until all special conditions are satisfied and the project is in compliance. Once the review process is completed by the Office of the Budget, the Payment Request is then sent to the Comptroller's Office, who then sends it to the Treasury Department. For this reason, adequate interim financing should be in place to bridge the gap between the time a Payment Request is submitted and the time a payment is actually disbursed. Please see the match funding/interim financing section for more information on interim financing.
2. **HOW DOES THE RACP REIMBURSEMENT PROCESS WORK?** Once all special conditions to the Grant Agreement have been satisfied and compliance met, Commonwealth grant funds will become available for reimbursement. The RACP grant program operates on a proportional reimbursement basis. As the Grantee incurs and pays construction expenses, the Commonwealth will reimburse – contingent upon the corresponding expenditure of matching funds. Sufficient documentation regarding reimbursable expenditures and matching expenditures should be provided with any request for reimbursement.
3. **WHEN MAY I START MY DRAWDOWN?** Grantees may start submitting their Payment Requests for reimbursement as soon as they have started construction and paid eligible costs. Reimbursements are subject to compliance with the RACP Grant Agreement and the satisfaction

of all the special conditions listed in Appendix B to the contract. The monthly drawdown amount is subject to the limitations shown in Appendix C to the Grant Agreement.

4. **WILL I RECEIVE RACP GRANT FUNDS UP FRONT JUST BY ASKING FOR THEM?** During construction activities, the project is monitored for compliance by the consultant assigned to the project during the Project Management Proposal process. The Office of the Budget is required to reimburse the RACP grant on a proportional basis based on the corresponding expenditure of matching funds. It is important to know that the entire scope of the project must: (1) be in compliance with all RACP requirements listed in the Grant Agreement, such as those governing bidding, adherence to the Prevailing Wage Act and use of domestic steel and (2) satisfy all of the special conditions identified in the agreement between the Office of the Budget and the grant recipient before access to the RACP funding is granted. After the project reaches 100% completion, a portion of the grant may be retained pending satisfactory compliance of all RACP program requirements.
5. **WHERE MAY I DOWNLOAD THE PAYMENT REQUEST FORMS?** All reimbursement materials can be downloaded from [RACP Handbook & Forms](#) section on the RACP section of the Office of the Budget Web site.
6. **CAN I BE REIMBURSED FOR LAND ACQUISITION COSTS?** The allowance of RACP funds for land acquisition costs is at the discretion of the Office of the Budget. If allowed, RACP funding for acquisition costs is generally limited to no more than 30% of the total grant amount. This 30% maximum allowance includes any land acquisition and/or equipment costs. Land Acquisition Costs cannot be the sole use of RACP funds. The primary focus of the RACP scope of work should be construction. For land acquisition costs to be reimbursable, the purchase date must occur after the authorization date of the itemized project and have RACP scope construction activity occur on the site.
7. **CAN I BE REIMBURSED FOR EQUIPMENT COSTS?** The allowance of RACP funds for equipment costs is at the discretion of the Office of the Budget. If allowed, RACP funding for equipment costs is generally limited to no more than 30% of the total grant amount. This 30% maximum allowance includes any equipment and/or land acquisition costs. Equipment costs cannot be the sole use of RACP funds. The primary focus of the RACP scope of work should be construction. For equipment to be reimbursable, it must be fixed to the realty, have a substantial useful life, and be directly related to the RACP project. Documentation of the useful life must be provided.
8. **WHEN SUBMITTING A REIMBURSEMENT REQUEST, WHAT SUPPORTING DOCUMENTATION IS REQUIRED FOR MATCH ONLY COST CATEGORIES?** Payment Request submissions must include all supporting documentation, including copies of invoices and proof of payment, for all cost categories whether they are reimbursable or match only. Typical proof of payment consists of the front & back of canceled checks. Alternate proof of payment can consist of the front of a check & bank statement confirming withdrawal from the payor's account, electronic payment records (provided they clearly identify the payor, payee, dollar amount and date), or something similar. The Office of the Budget also reserves the right to request additional information and/or documentation after review of an initial payment request submission up to and including during performance of the legislatively mandated close-out audit.
9. **WHAT CAN BE USED AS MATCH COSTS?** Typically, match costs include administration, legal, financing/accounting, architectural/engineering, land, furniture, fixtures, equipment, and relocation costs that are directly related to the RACP project. Expenses paid before the authorization date are not eligible RACP costs (use of land as match ONLY is permissible.)

- 10. IS ANYONE FROM THE OFFICE OF THE BUDGET AVAILABLE TO MEET WITH ME TO GO OVER THE RACP PROCESS AND EXPLAIN HOW TO PREPARE THE PAYMENT REQUEST FORMS?** Yes, the Grantee/Sub-Grantee (or their designated representatives) may request, at no cost to them, a facilitation meeting with an Office of the Budget employee involved in the RACP program. It is strongly suggested that meetings be held at the beginning of construction to go over the process and the preparation of the Payment Request forms. Requests for meetings should be made to the Office of the Budget RA-OB-RACP@pa.gov. Past experience has shown that these meetings are very beneficial to the successful culmination of the grant process.
- 11. MAY I RECEIVE MY GRANT DISBURSEMENT DIRECTLY INTO MY CHECKING ACCOUNT?** Yes, all grant disbursements are now being made to Grantees through the Commonwealth's Automated Clearing House (ACH) Network, which are commonly known as direct deposits. All Grantees must submit or must have already established its ACH information in the Commonwealth's Master Database. Grantees/grant recipients should register as a [Non-Procurement Vendor](#). Non-procurement vendor help is available [here](#). Note: It is the responsibility of the Grantee to ensure that the ACH information contained in the Commonwealth's Master Database is accurate and complete. Failure to maintain accurate and complete information may result in delays in grant disbursements.
- 12. DOES THE OFFICE OF THE BUDGET HOLD A CERTAIN PERCENTAGE OF THE PAYMENT? IF SO, HOW MUCH DOES IT HOLD?** Our retainage procedure differs from the typical procedure in the construction industry. The Office of the Budget reserves the right to retain up to 10% of the total grant amount. The retainage is calculated and applied after the Grantee submits the final Payment Request for reimbursement. The retained amount will be withheld from any amount due in the final Payment Request(s). The Grantees will be contacted, and the retainage will be released after the close-out audit has been successfully completed.
- 13. ARE RACP GRANTS TAXABLE, AND WILL I RECEIVE A 1099 FOR THE GRANT PROCEEDS?** The Office of the Budget enters into grant agreements with various entity types, per criteria established in the Capital Facilities Debt Enabling Act. The Office of the Budget does NOT provide tax, legal or accounting advice. Grantees/Sub-grantees should consult a qualified tax professional with respect to the tax consequences of receiving RACP funds. The Office of the Budget does not issue Form 1099-MISC for grants awarded through RACP.

Section 8 – Compliance/Bidding/PWA/Steel/etc.

- 1. IS COMPLIANCE WITH THE GRANT AGREEMENT MONITORED DURING THE PROJECT'S CONSTRUCTION?** One of the Commonwealth's consultants will contact you to go over the construction monitoring phase review procedures. Usually, some type of monitoring begins when the Project Management Proposal review report is submitted. Periodic construction monitoring reports will be prepared by the consultant and submitted to the Office of the Budget and to the Grantee/Sub-Grantee once construction has begun. These reports are the basis for the Payment Request review procedures performed to determine ongoing compliance before Commonwealth funds are released. The project must be in full compliance to receive and continue to receive any RACP funds.
- 2. I NEED TO LET OUT MY BIDS. WHAT ARE THE BIDDING REQUIREMENTS?** The sole and exclusive bidding requirement for RACP projects is in the Capital Facilities Debt Enabling Act (Act 1 of 1999, as amended), which states, "Notwithstanding any other provision of law, the solicitation of a

minimum of three written bids for all contracted construction work on redevelopment assistance capital projects shall be the sole requirement for the composition, solicitation, opening and award of bids on such projects. Notwithstanding the foregoing, the construction work shall be performed subject to the act of March 3, 1978 (P. L. 6, No. 3), known as the Steel Products Procurement Act." This means that all prime contractors, general contractors, and subcontractors must be bid. Please note that solicitation is meant to indicate the act of actively asking, seeking, or pursuing firms to complete construction-related services based on the RACP-defined project scope. The law mandates that three written solicitations must be pursued; therefore, phone solicitations will not meet RACP bid requirements. Please be advised that self-bidding election must be approved by our Legal Department prior to bidding the RACP-delineated project scope. Please be advised that the bidding requirements would be satisfied if the RACP-defined project is publicly bid. The bidding format is at the discretion of the project representatives and subject to local requirements on trades composition.

3. **CAN THE BIDDING REQUIREMENT BE WAIVED?** Unless the terms of the law change, the Office of the Budget cannot grant waivers for bidding requirements to Grantees.
4. **DO I NEED TO BID FOR EACH SEPARATE TRADE IF MY GENERAL CONTRACTOR WAS BID FOR THE WHOLE CONTRACT AMOUNT?** RACP projects are not subject to separation of trades. You simply need to solicit three bids for "all generally contracted work,". You do not need to take the lowest bid however; you must provide the Office of the Budget with an explanation as to why the lowest bidder was not selected.
5. **DOES MY CONSTRUCTION MANAGER POSITION HAVE TO BE BID?** Construction manager services do not have to be bid. However, if the construction manager is not bid and serves mostly as a project manager/administrator, his or her costs could count only as match. The Office of the Budget will not reimburse any of the construction manager costs if they self-perform any of the construction work, since that work was not bid. Additionally, in order to protect the project/owner, performance and payment bonds must cover 100% of the total value of the construction.
6. **MAY RACP FUNDS BE USED TO COMPLETE A DESIGN/BUILD PROJECT?** You may proceed with a design/build approach and select whomever you want. However, in order to meet the RACP bidding requirement, the Office of the Budget will examine the bidding of the various subcontractors. To the extent the winning design/build contractor self-performs some of the construction work, you will need to demonstrate that you solicited three bids for the design/build approach. In addition, design costs are not reimbursable. Only the following costs are reimbursable: Construction, interest during construction, land (subject to certain restrictions) and permits.
7. **I INTEND TO SOLICIT BIDS VIA ELECTRONIC MEANS. WHAT DOCUMENTATION DO I NEED TO PROVIDE TO SUPPORT BID COMPLIANCE WITH RACP REQUIREMENTS IF THE BID SOLICITATION METHOD WAS PERFORMED VIA ELECTRONIC MEANS?** Please, be advised that the use of an electronic bidding software packages or free/paid website to solicit bids does not preclude/waive the requirement that documentation to support compliance with RACP bidding requirements be submitted for review. Please also note that if an electronic bidding software package or free/paid website is utilized to conduct the bid solicitation, a signed and notarized explanation on letterhead of the entity that conducted the bid solicitation will need to be submitted. The letter should include details, such as the name of the bidding software package or free/paid website used, how

it works, date and time the solicitation was sent out, and any relevant information deemed appropriate by OB. Please ensure that copies of the electronic records are maintained, saved and available for submission to support compliance with RACP bidding requirements. The types of electronic records, which should be maintained and saved for submission should include, but is not limited to, copies of 1) emails - regular/standard and/or invitation to bid sent to the various contractors; 2) replies/queries; 3) emails/other written documentation, which indicate a decline to bid or will not bid status 4) documentation (i.e. bid forms, description of work, plans and specifications, etc.) emailed or made available for download as part of the bid solicitation; 5) transaction-type logs, which contain information, such as a) the work being solicited, b) the contractors solicited, and c) the date and time-stamp of when the solicitation was sent out; 6) screenshots; and 7) proposals received.

8. OUR GENERAL CONTRACTOR / CONSTRUCTION MANAGER WAS SELECTED. MAY OUR GENERAL CONTRACTOR / CONSTRUCTION MANAGER SELF-BID ON THE CONSTRUCTION WORK WITHIN THE RACP-DEFINED PROJECT SCOPE?

Please be advised that any self-bidding election must be reviewed and approved by our Legal Department prior to its occurrence in any phase of the construction work within the RACP-defined project scope. To assist you better, please forward the following detailed information, which includes, but is not necessarily limited to:

- the exact method the bid solicitation will be conducted.
- who will be in charge of the bidding process.
- who will solicit the contractors.
- who will receive the proposals.
- what method will the proposals be submitted.
- who will open the proposals.
- who will be present at the opening of the proposals.
- who will conduct any negotiations (i.e., value engineering) prior to contract award;
- who will determine who the contract is awarded to, etc.
- Please note that the above requested information will need to be reviewed by our Legal Department. The review process could take a number of weeks before a decision is rendered. If a project pursues and/or completes any self-bidding process prior to the review and approval of OB Legal, the project does so at its own risk. Contracts that have deemed to be non-bid complaint are not eligible for reimbursements, nor match.

9. ARE BID SOLICITATIONS REQUIRED FOR EQUIPMENT PURCHASES?

Bid solicitation is not required for equipment purchased separately. Please note that IF the purchase of equipment also includes installation services, the contract is NOT subject to PA Prevailing Wage Act. However, if the equipment contract does not include the installation, then the labor associated with the installation IS subject to PA Prevailing Wage Act AND the labor associated with the installation of the equipment must be bid. Please be advised that in both cases, the labor component cannot be disassociated from the purchased equipment. It is discretionary to the Office of the Budget what type of items fall into the equipment category and are RACP-eligible costs. Please be further advised that equipment and the labor associated with the installation of the equipment must both be present and directly related to the RACP-delineated scope.

10. WE DO NOT HAVE ANY CERTIFIED PAYROLLS TO DEMONSTRATE COMPLIANCE WITH THE PENNSYLVANIA PREVAILING WAGE ACT. CAN THIS REQUIREMENT BE WAIVED TO FACILITATE THE RECEIPT OF THE STATE GRANT?

The Office of the Budget cannot grant waivers for the

Prevailing Wage Act. All Grantees must comply with the act. Grantees that fail to abide by the Prevailing Wage Act do so at their own risk. Additionally, the Grantee/Sub-Grantee must provide a copy of the Department of Labor & Industry's Pennsylvania Prevailing Wage Determination Letter issued for the specific project to demonstrate compliance with the Prevailing Wage Act. The project should apply to the Department of Labor & Industry for the determination letter before construction begins. If necessary, the Department of Labor & Industry can issue determination letters after construction has begun. Prevailing wage information and forms can be found at: [Visit the Labor and Industry website to obtain Prevailing wage information and forms.](#)

- 11. WE DO NOT HAVE ANY STEEL CERTIFICATES TO DEMONSTRATE COMPLIANCE WITH THE PENNSYLVANIA STEEL PROCUREMENT ACT. CAN YOU WAIVE THIS REQUIREMENT TO FACILITATE THE RECEIPT OF THE STATE GRANT?** The Office of the Budget cannot grant waivers for the Pennsylvania Steel Procurement Act unless the terms of the law change. All Grantees must comply with the Steel Procurement Act. Steel certificates noting milled/manufactured in the United States are required to document compliance with the Steel Act and must be supplied for all structural steel. The appropriate ST form or DGS Exemption letter will be necessary for non-structural steel to be in compliance. If a Grantee fails to abide by the Pennsylvania Steel Procurement Act in anticipation of a waiver, it does so at its own risk.
- 12. OUR CONSTRUCTION CONTRACTOR CANNOT OBTAIN THE 100% OF CONSTRUCTION COST PERFORMANCE AND PAYMENT BOND REQUIREMENT. CAN THIS BE WAIVED?** The requirement for 100% performance and payment bonds is a state law. The Office of the Budget cannot waive that requirement.
- 13. THE GRANT AGREEMENT REQUIRES EVIDENCE OF FIDELITY BOND COVERAGE, IS THERE A MINIMUM AMOUNT OF COVERAGE NEEDED?** Grantees should submit certificates of insurance to support fidelity bond coverage is in effect and the coverage amount meets or exceeds the RACP grant amount, or the coverage amount meets or exceeds the monthly project funding schedule contained in Appendix C of the grant agreement. For Grantees with multiple projects and/or grants larger than \$5,000,000 the coverage amount can be the lesser of either \$1,000,000 or 20% of the RACP grant amount(s).
- 14. DO I NEED A PROJECT SIGN OR ACKNOWLEDGEMENT FOR MY RACP FUNDED PROJECT?** Yes, the RACP grant agreement requires the acknowledgement of Commonwealth financial assistance. Depending on the timing of the RACP award, Commonwealth funding acknowledgment should be displayed upon the commencement of the project, but no later than the effective date of the project's grant agreement. The erected project sign should state "Financial Assistance provided by the Commonwealth of Pennsylvania, Honorable [name of current governor], Governor." Any publications concerning the project should also acknowledge Commonwealth financial assistance in the same manner. Acknowledgement of Commonwealth financial assistance may be combined with an acknowledgement of other funding sources on the project sign(s) and in project publications, provided that the acknowledgement of Commonwealth assistance shall be listed first and no less prominently than any other source.
- 15. CAN I USE A PURCHASING COOPERATIVE, SUCH AS COSTARS, KEYSTONE PURCHASE NETWORK (KPN), OR TIPS-USA PURCHASING COOPERATIVE, TO MEET RACP BIDDING REQUIREMENTS?** Selecting pre-qualified contractors from a purchasing cooperative does NOT meet RACP bid requirements. If a RACP project wishes to utilize a purchasing cooperative for bidding, their written solicitation must be for the specific stated RACP scope of work / trades covered under

the RACP scope. Further, it must be sent to a minimum of three construction contractors - whether all from the purchase cooperative list OR partly from the purchase cooperative list and partly "outsiders" (i.e., those not part of the purchasing cooperative) - to comply with RACP bidding requirements. Please note one of the key important components here is that when the written solicitation occurs, it covers the specific RACP scope and not a general scope of work. Prior to proceeding with any contractor selection via purchasing cooperatives, project representatives can request a preliminary bid compliance review and further guidance by sending an email to RA-OB-RACP@pa.gov.

Section 9 – Risk and Compliance

- 1. I HAVE BEEN CONTACTED BY A STATE RISK AND COMPLIANCE OFFICER TO SET UP A CONFERENCE FOR ACLOSE-OUT AUDIT OF MY RACP PROJECT FOR WHICH I RECENTLY SENT IN MY LAST PAYMENT REQUEST. IS THIS NORMAL?** Yes. All RACP projects must have a legislatively mandated close-out audit performed to comply with Act 39 of 1993 and in accordance with Article 5 of your grant agreement.
- 2. THE LIST OF DOCUMENTS THE RISK AND COMPLIANCE OFFICER SENT ME TO HAVE AVAILABLE FOR THE CLOSE-OUT AUDIT INCLUDES DOCUMENTATION PREVIOUSLY SUPPLIED TO THE STATE CONSULTANT FOR MY PROJECT. DOES THE SAME DOCUMENTATION NEED TO BE REVIEWED AGAIN?** Yes. Keep in mind that the state consultant is part of the monitoring process. The risk and compliance officer will need to examine documentation to be able to render a close-out audit opinion. The Grantee/Sub-Grantee must keep all documentation concerning the project costs and RACP compliance and make it available during the close-out audit period. Many times, the list will include documentation previously submitted to the Office of the Budget in order to satisfy special conditions.
- 3. WHO WILL BE PERFORMING THE CLOSE OUT AUDIT OF MY RACP PROJECT?** A close-out audit will be performed by the Office of the Budget or its representative for all projects. The Grantee will not be required to pay for this close out audit.
- 4. MY RACP PROJECT WILL BE COMPLETED IN PHASES, WILL AN AUDIT BE COMPLETED AFTER EACH PHASE OR AT THE COMPLETION OF ALL PHASES?** In the interest of document availability, once a specific phase is completed the Office of the Budget will perform an audit on that phase. After completion of all phases, a final close-out audit will be performed.

Redevelopment Assistance Capital Program (RACP)



Steel Guidance

November 2024

GUIDANCE ON STEEL CERTIFICATION

The following guidance is a clarification from the Office of the Budget (OB) regarding the requirements associated with the Pennsylvania Steel Products Procurement Act (SPPA) relative to the RACP program whose statutes are regulated under Act 1 of 1999, as amended. In the past, many grantees have inquired about specific cases and we were able to provide each individual project with specific directions. Additionally, we had only accepted the ST-4 form that the Department of General Services (DGS) had exclusively devised to address exceptions linked to the requirements of the SPPA in the handling of special cases or exceptions. Please note that cost consideration (or convenience) is not an acceptable justification that the ST-4 form can address. Filled out ST-4 forms premised on cost consideration will not be accepted by OB.

OB accepts two DGS ST forms (ST-2 and ST-3) with some caveats, providing that the forms are properly filled out. The ST-1 form is NOT a valid option and shall NOT be accepted by OB. It is not necessary for the ST-2, ST-3, and ST-4 forms to be notarized. Please, be advised that this guidance is specifically tailored to suit the published and programmatic needs of OB as the overseer of RACP program. This is not a commonwealth-wide policy. Any attempt to impose this guidance on other state agencies is strongly discouraged.

Please, be aware that the aforementioned ST forms are acceptable only in cases where non-structural steel needs to be addressed. The DGS ST forms do not replace the steel certification forms associated with structural steel. It remains the responsibility of the project representatives to provide documented evidence that a non-structural steel product is not domestically produced in sufficient quantities.

OB shall continue to require that steel mill certifications be submitted to demonstrate compliance with the steel requirements. Please, be further advised that OB DOES NOT need to approve the ST forms prior to the start of the construction period. The ST forms need to be submitted to demonstrate that compliance, when and where necessary, has been met. The ST forms exceptions are displayed below. Please submit questions to RA-OB-RACP-Steel-Cost@pa.gov.

It is suggested that the certifications be collected at the time any steel for the project is purchased and delivered to ease the collection process.

Since 2013, OB has utilized the DGS Exempt Machinery and Equipment Steel Products listings as part of the RACP steel policy. DGS published a Statement of Policy - Steel Products Procurement in the Pennsylvania Bulletin Volume 43, Number 6 dated February 9, 2013 (See PA Bulletin #43, pages 85-86) that discussed their production of an annual list, based on their analysis of submitted ST-4 forms, which exempts certain steel products not produced domestically in sufficient quantity.

No other changes in RACP steel policy resulted from this new adjustment; consequently, the use of steel certificates for structural steel will still be required. Please note that the use of ST 2, 3, and 4, as requested for other steel products, will still be utilized unless an exemption based on the list has been formulated and forwarded to OB.

OB's guidance is to make sure the Grantee/Subgrantee's are aware that it's their responsibility to certify all applicable steel components incorporated within RACP projects. In some

instances, OB/RACP staff and/or the state assigned consultant may limit their compliance analysis to significant steel components. The projects' architect/engineers are responsible for preparing/providing a significant steel component listing, not the RACP assigned consultant.

Two distinct approaches are presented below for steel products that are structural and/or have a significant building component.

Structural Steel Products

Pursuant to the SPPA, OB will require a mill certificate containing the statement "milled, melted, and manufactured in the USA" for all structural steel products used on RACP projects. We shall deem as ineligible all contracts that are unable to demonstrate compliance via the submission of steel certifications. Therefore, the value of construction contracts associated with non-compliant steel will be removed (both materials and labor costs) from the scope of the project.

Non-Structural Steel Products

Pursuant to the SPPA, OB will require, either a mill certificate containing the statement "milled, melted, and manufactured in the USA" or the appropriate ST form or an **Exemption Request** to utilize the DGS current years' Final List of Exempt Machinery and Equipment Steel Products to demonstrate compliance associated with the non-structural steel products used on RACP projects. OB shall deem as ineligible all contracts that are unable to demonstrate compliance via the submission of **steel certifications /ST forms/Exemption Request** based on the DGS Exempt Machinery and Equipment Steel Products listing. Therefore, the value of construction contracts associated with non-compliant steel will be removed (both materials and labor costs) from the scope of the project.

Recycled products, melted from previously used steel, are acceptable, providing that adequate documentation from the supplier has been furnished. The supplier shall certify that the recycled steel product was produced in the USA.

Furthermore, the burden of proof for all non-structural steel products not produced domestically in sufficient quantities is still the project's responsibility to provide.

Please be aware that the acceptance of ST forms is contingent upon the form being fully filled-in and compliant with the submission guidelines for steel certifications for DGS projects with the following exceptions:

- A. It is not necessary for the forms to be notarized; however, all ST forms must be signed. Original signatures or electronic signatures through Adobe fill/sign, DocuSign, or Nuance (program which allows electronic signature similar to Adobe fill/sign) are acceptable.
- B. Any questions regarding steel certification submissions and/or compliance with the Act shall be submitted to the OB Steel Resource Account (RA-OBRACP-Steel-Cost@pa.gov).
- C. The Steel certification forms do NOT need to be submitted and approved by OB before the steel product arrives on site so as not to interfere with the project construction schedule.
- D. OB assumes responsibility for acceptance of the DGS ST forms in accordance with this policy.

Completion of the ST-2, ST-3, and ST-4 forms shall follow the DGS directions attached to the form with the following exceptions:

- ST forms do NOT need to be submitted and approved by OB before the steel product arrives on site so as not to interfere with the construction schedule.
- RACP ME# assigned to the project shall be inserted in all areas requiring the DGS contract number (Line#5).
- RACP official project name shall be inserted in all areas requiring the contract title (Line #6).

Note:

Acceptance of each ST form shall be determined by OB at its sole discretion. All documents and other information to be delivered in order to demonstrate compliance with the steel requirements shall be and are, in form, content and substance, subject to the approval of OB, which approval may be withheld or delayed at OB's discretion. OB reserves the right to reject all improperly filled out or unsupported ST forms.

Below are links to PDF copies of the three acceptable ST Forms that can be obtained from the RACP website:

- [ST-2 Steel Origin Certification: Non-Identifiable, Non-Structural Steel](#)
- [ST-3 75% U.S. Manufacture Certification](#)
- [ST-4 Not Domestically Manufactured: Prime Contractor](#) (only to be used when the items requested to be exempted are not found on the appropriate year's List of Exempt Machinery and Equipment Steel Products [see section below entitled "Year of DGS Exemption Listing to Use"])

To implement the RACP policy on Non-structural Steel **Exemption Request** utilizing the DGS's current years' Final List of Exempt Machinery and Equipment Steel Products, referred to as the "Exemption List", please follow the below requirements:

1. The Project must be under "active" construction (workers on site) on or AFTER 1/01/2013 (RACP effective date) to use the "Exemption List".
2. "Active" construction does not include performance of just "punch list" items.
3. Effective date is based on the "active" construction date and not the date the machinery and equipment were purchased.
4. There is no retroactive application of utilization of the "Exemption List".
5. No ST-4 form is required for a RACP Exemption Request based on the "Exemption List".
6. RACP Exemption Request (to utilize the "Exemption List") must come from a contractor involved in the construction of the project and be:
 - On Construction Company Letterhead.
 - Dated and signed by appropriate company official (does not need to be notarized).
 - Should be addressed to Office of Budget
 - Should contain RACP project name and/or ME #
 - Lists any/all machinery and equipment that the Company is requesting to have exempted from ST-4 documentation.
 - All items listed on RACP Exemption Request letter must clearly match-up to an item

on the appropriate year's "Exemption List" and the Exemption List year should be notated for each item.

- There can/may be multiple construction company RACP Exemption Request letters utilized for various machinery and equipment, as applicable, per project.
- Exemption Request can be submitted directly by the project to OB or through the State Assigned Consultant for their project.
- Any questions regarding the exemption request submission and/or compliance with the Act shall also be submitted to OB (RA-OB-RACP-Steel-Cost@pa.gov)

Year of DGS Exemption Listing to Use:

A project should be using the exemption listing for when they are in active construction. For example, if construction was active (and complete) in 2021 they would use the 2021 listing. If a project overlaps a calendar year, they should use the latest listing in which construction is active. For example, if construction is active in 2021 and 2022, they would use the 2022 listing.

If a project is phased, they should use the listing for the year they are in active construction for each phase. For example, if the first phase starts and ends in 2021 whereas the second phase starts and ends in 2022, the first phase would use the 2021 listing while the second phase would use the 2022 listing. If a phase overlaps a calendar year, follow the 1st paragraph above.

Among other items, the DGS web page for Steel Products Procurement Act information includes links for a copy of the Act; the current year's Final List of Exempt Machinery and Equipment Steel Products; the PA Bulletin's Steel Products Procurement Act Statement of Policy; and Frequently Asked Questions. Certain prior years DGS Exemption Lists are downloadable from the RACP website.

Please be aware that all other steel items not specifically exempted or that may require any type of interpretation would be discretionary to OB's policy. Be reminded that this exemption listing is not effective for structural steel.

Note:

Acceptance of each Exemption Request shall be determined by OB at its sole discretion. All documents and other information to demonstrate compliance with the steel requirements shall be in form, content, and substance, subject to the approval of OB, which approval may be withheld or delayed at OB's discretion. OB reserves the right to reject all improperly filled out or unsupported Exemption Request.

ST-2

This form must be filled out for non-identifiable, non-structural steel products.

SECTION A

To be filled out by the Purchaser, the firm that pays the Fabricator

Line #1 This is the name of the firm that is dealing directly with the Fabricator

Line #2 This is the purchaser's mailing address.

Line #3 This is the purchaser's business phone.

Line #4 This is the date the ST-2 form is sent to the fabricator.

Line #5 This is the ~~DGS contract number or~~ **RACP ME#** for the project.

Line #6 This is the ~~DGS project description~~ **RACP Project Name.**

Line #7 This is the "steel product" being certified, such as a chiller, condenser, hollow metal doors. The prime contractor may not fill in the line with a description like "structural steel", "heating unit" or "air conditioning Unit". The model number, if any, of the steel product must be listed as indicated.

**LINE #7 IS THE MOST CRITICAL PART OF THE FORM.
FAILURE TO PROPERLY FILL OUT LINE #7 ON EACH ST FORM
MAKES THE ENTIRE FORM INVALID AND A NEW FORM MUST BE
SUBMITTED.**

SECTION B

To be filled out by the Fabricator, the firm that assembles the product listed on Line #7.

Line #1 This is the Fabricator's name.

Line #2 This is the Fabricator's mailing address.

Line #3 This is the Fabricator's business phone.

Line #4 This is the date the Fabricator receives the ST-2 from the Purchaser.

Line #5 This is the Fabricator's Federal I.D. number.

SECTION C

1. Language – **No modifications, cross-outs or alterations of any type may be made to the language of this certification paragraph.**
2. Signature – Two signatures are required on the ST-1 form. The Prime Contractor's President/Vice President must sign on one line and the Secretary or Treasurer must sign as a witness. The names should be typed or printed beneath the signature lines. Failure to type in the names **does not** invalidate the ST form.

ST-2 STEEL ORIGIN CERTIFICATION:
NON-IDENTIFIABLE, NON-STRUCTURAL STEEL

This form must be executed by the Purchaser and the Fabricator of any item containing steel that is not structural steel. This form must be submitted to the APM within 30 days from the date the Professional approved a submittal listing a "steel product". No steel product may be delivered on-site unless DGS has received the ST form. Structural steel is defined as steel products used as a basic structural element or a project (i.e. steel beams, columns, decking stairways, reinforcing bars, pipes, etc.). Purchasers of structural steel products (contractors or subcontractors) **must** provide bills of lading, invoices **and** mill certifications that the steel was manufactured in the United States instead of this form. The Fabricator shall be herein defined as the firm that assembles the component parts of the product to be purchased. The Department of General Services will accept the certification of firms that are earlier in the chain of purchase (i.e. manufacturers of components, steel suppliers) in lieu of the Fabricator.

A. TO BE COMPLETED BY THE PURCHASER:

1. Name of purchasing firm: _____
 2. Firm's address: _____
 3. Firm's phone number: _____ 4. Date submitted to Fabricator: _____
 5. Contract No. DGS _____ 6. Contract Title: _____
 7. Steel Product Certified: _____
- Model: _____

B. TO BE COMPLETED BY THE FABRICATOR/MANUFACTURER:

1. Name of firm: _____
2. Address of firm: _____
3. Firms phone number: _____ 4. Date Received: _____
5. Federal Employer ID. No: _____

CERTIFICATION: I, the undersigned officer of the Fabricator/Manufacturer, do certify that our firm assembled/fabricated the components to the steel products listed in Section A, Item 7, and that all steel components therein are comprised of steel that is melted and/or fabricated in the United States. I understand that, by signing this document, I certify that I have received assurances from the suppliers/manufacturers of the components that said components do not contain foreign manufactured steel. I further understand that this document is subject to the provisions of the Unsworn Falsification to Authorities Act (18 P.S. § 4904). I also understand that I am subject to the provisions of the Steel Products Procurement Act (73 P.S. § 1881, et. seq.) which provides penalties including, but not limited to, debarment from supplying any products for Commonwealth of Pennsylvania Public works projects for a period of five (5) years for violations therein. I agree to provide documentation supporting these facts if requested by the Commonwealth. The Commonwealth reserves the right to pursue any action deemed necessary to protect the Commonwealth's interest and ensure compliance with the laws of the Commonwealth.

WITNESS:

Name:
Secretary or Treasurer

Name: _____ (Seal)
President or Vice President

ST-3

2-STEP ELIGIBILITY ANALYSIS:

BEFORE A PRIME CONTRACTOR CAN SUBMIT AN ST-3, THE FOLLOWING ANALYSIS MUST BE SATISFIED

STEP #1: The contractor must establish that the “product” **contains BOTH:**

- Steel melted in the USA

AND

- Foreign Steel

Note: Step #1 focuses upon the **content** of the “product”.

Note: The % need not be close; it can be 99-1, so long as there is both foreign and domestic steel in the “product”.

STEP #2: The contractor must establish that 75% of the **cost** of the “product” has been mined, produced or manufactured in the USA.

Note: Step #2 focuses upon the cost of the entire “product”, not just the steel within it.

SECTION A

Line #1 This is the Prime Contractor’s name.

Line #2 This is the Prime Contractor’s business address.

Line #3 This is the Prime Contractor’s phone number.

Line #4 This is the date the ST-3 is submitted to the fabricator.

Line #5 This is ~~DCS contract number or~~ **RACP ME#** for the project for the project.

Line #6 This is the ~~DCS project description~~ **RACP Project Name.**

Line #7 This is the “steel product” being certified, such as a chiller, condenser, hollow metal doors. The prime contractor **may not** fill in the line with a description like “structural steel”, “heating unit” or “air conditioning unit”. The model number, if any, or the steel product must be listed as indicated.

LINE #7 IS THE MOST CRITICAL PART OF THE FORM. FAILURE TO PROPERLY FILL OUT LINE #7 ON EACH ST FORM MAKES THE ENTIRE FORM INVALID AND A NEW FORM MUST BE SUBMITTED.

SECTION B **To be filled out by the Fabricator/Manufacturer, the firm that fabricates the product listed on Line A7.**

Line #1 This is the Fabricator's name.

Line #2 This is the Fabricator's business address.

Line #3 This is the Fabricator's business phone.

Line #4 This is the date the Fabricator receives the ST-3 from the purchaser.

Line #5 This is the Fabricator's Federal I.D. Number.

Line #6 The Fabricator must insert the percentage of the cost of the articles, materials and supplies which have been mined, produced or manufactured in the U.S. for the product listed on Line #7.

SECTION C

1. Language – **No modifications, cross-outs or alterations of any type may be made to the language of this certification paragraph.**
2. Signature – Two signatures are required on the ST-3 form. The Fabricator's President/Vice President must sign on one line **and** the Secretary or Treasurer must sign as a witness. The names should be typed or printed beneath the signature lines. Failure to type in the names does not validate the ST form.

NOTES on ST-3 Forms:

- It is not necessary to submit an ST-1 with the ST-3.
- **DGS reserves the right to request additional documentation to support the percentage specified on Line 14. If the Fabricator/manufacturer refuses to produce such documentation and/or DGS deems it to be in the Commonwealth's best interests, DGS may request the Office of Inspector General to investigate the submission of the ST-3 form.**

ST-3
75% U.S. MANUFACTURE CERTIFICATION

The Steel Products Procurement Act (73 P.S. § 1881, et. seq.) allows the use of steel products with **both** foreign and domestic steel **if at least 75 percent of the cost** of the materials (including steel, rubber, wood, plastics, etc.) in the product are manufactured or produced, as the case may be, in the United States.

This form must be executed by a Fabricator of any item containing BOTH U.S. AND FOREIGN STEEL. The fabricator shall hereby be defined as the firm that assembles the component parts of the product to be purchased. The Department of General Services will accept the certification of firms that are **earlier** in the chain of purchase (i.e., manufacturers of components, steel suppliers) in lieu of the Fabricator.

This form must be submitted to the APM within 30 days from the date the Professional approves a submittal listing a "steel product". No steel product may be delivered on-site unless DGS has received an ST form.

A. TO BE COMPLETED BY THE PRIME CONTRACTOR (PURCHASER):

1. Name of Contractor: _____
2. Address of Contractor: _____
3. Phone Number: _____ 4. Date submitted to Fabricator: _____
5. Contract No. DGS: _____ 6. Contract Title: _____
7. Steel Product Certified: _____
Model: _____

B. TO BE COMPLETED BY THE FABRICATOR/MANUFACTURER:

1. Name of Firm: _____
2. Address of Firm: _____
3. Firm's Phone number: _____ 4. Date Received: _____
5. Federal Employer ID No. _____

6. Percentage of the cost of the articles, materials and supplies which have been mined, produced or manufactured in the U.S. for the product listed above on line 7: _____

CERTIFICATION: I, the undersigned Officer of the Fabricator/Manufacturer, do certify that our firm assembled/manufactured the components to the steel product listed in Section 7, that the steel in said product is both foreign and domestically manufactured, and that all the facts contained in this document are true. I agree to provide documentation supporting these facts if requested by the Commonwealth. I further understand that this document is subject to the provisions of the unsworn Falsification to Authorities Act (18 P.S. § 4904) and the Steel products Procurement Act (73 P.S. § 1881, et seq.) which provide penalties including, but not limited to, debarment from supplying any products for Commonwealth of Pennsylvania public works projects for a period of five (5) years for violations therein. The Commonwealth reserves the right to pursue any action deemed necessary to protect the Commonwealth's interest and ensure compliance with the laws of the Commonwealth.

WITNESS:

Name:
Secretary or Treasurer

Name: (Seal)
President or Vice President

2024 List of Exempt Machinery and Equipment Steel Products

The Department of General Services (DGS) has reviewed all comments and supporting documentation received prior to the end of the thirty-day (30) comment period and presents here its annual list of exempt machinery and equipment steel products. Contractors, subcontractors, suppliers, bidders, offerors and public agencies may rely on the list of exempt steel products in preparing bids and contracts for any project that is subject to the Steel Products Procurement Act.

Pursuant to the department's Statement of Policy and the Steel Products Procurement Act, DGS will not make any changes to this list during the calendar year for which it was created. In early 2025 DGS will identify, from ST-4 waivers approved in calendar year 2024, specific machinery and equipment steel products that have been recognized as not being produced in the United States in sufficient quantities to meet the 2024 contract requirements. Those items will be added to the list presented below and the resultant list will be published in the Pennsylvania Bulletin for a thirty-day (30) public comment period at that time.

Exempt Machinery and Equipment Steel Products

Air Conditioning Units
Air Duct Housing w/Sample Tubes
Air Handling Units
Anchor Bolt
Audio RA Station
Annunciator Panel
AV Rack Kit
Back Box
Backflow Preventer
Battery Cabinet
Blank Filler Plate for Fiber
Blank Metal Door
Blank Plate for Outer Door
Bottom Dead Front Panel
Bridge for Cameras
Cabinet
Cardcage
Cast Steel Gate Valve
CCTV Power Supply
Ceiling Exhaust Fan
Ceiling Flange
Central Control Unit
Centrifugal pumps

Channel Video
Circulating Pump
Closers
Color Monitor
Combination Round Head Steel Zinc-Plated Toggle Bolts
Condensing Boilers
Conduit Fittings
Control Module Plate
Control Panel
Control Valve
Data Converter Unit
Deck Inserts
Deck and Rub Rail Fasteners
Dielectric Nipples
Digital Communicators
Digital Record
Door Protection
Door Trim/Handles
Drinking Fountain
Drip Pan ELL
Drop-In Anchors
Dry Tape Transformer
Drywall Screws
Dual Interface Module
Duct Detector w/Relay
Duct Housing
Ductless Split System
DVR Rack
Electric Traction Elevators
Electric Water Cooler
Elevator Controller
Elevator Hoistway
Encl. for Annunciator
Exit Devices
Exp Cage
Fence System Nuts and Bolts
Fire Alarm NAC Extender
Fire Alarm Peripherals
Fixed Door Station
Flexible Drops
Full Blank Plate
Galvanized Carriage Bolts

Garage Door Tracking
Gas Furnace
Gas Piping Butt Weld Tees
Gauges
Generator
Globe Valve (Steam)
Hand Dryer
Hanger Mounting Plates
Hangermates
Hangers Supports
Horn/Strobe
Inclined Platform Wheelchair Lifts
Inner & Outer Door
Inner Door Blank Plate
Interface Module
Lag Bolts
Large Remote Cab
Lighting Fixtures, Interior/Recessed
Lighting Fixtures, Surface Wrap
Lighting Fixtures, Track Head
Lock Cylinders
Locknuts
Locksets
Low Temp. Detection Thermostats
Lubrication Unit
Machine Screws
Main Control Board
Mega Press Fittings, Mega Press XL and G Fittings
Metal Lockers
Manual Pull Station
Med. Enclosure
Middle Dead Front
Mini-Interface Module
Monitor Mount
Monitor Wall Brk
Mounting Plate
Network Fiber Switch
Overhead Door
Overhead Stops
Patient Wandering Alarm
Pellet Storage Bin
Pipe Clamps
Pivots

Power Supply
Pull Station Box
RA Annunciator Pnl
Rack Mount Card Cage
Rack Mount Kit
Radiant Panels
Reader Interface
Relay Module
Remote Chiller
Round Head Machine Screw
Safety Relief Valve
Sampling Tube
Screw Air Compressor
Security Panel
Security Unit
Security/CCTV Camera Housing
Self-Turn / Self Tapping Screw
Shower/eye Washers
Signal Extender Module
Single Blank
Smoke Detector Wire
Speaker
Speaker/Strobe
Split HVAC System
Split Ring Hangers
Split Rings
Split System Air Conditioning
SSD-C Remote Display w/Control
SSD-C-REM Rem Display
Stainless Flat Bars
Stainless Steel Cable
Strobe
Submersible pump
Sump Pump
Surface Mount Speaker
Surface Station Box
Surge Arrester
Surge Protector
T8 Light Troffer
Tamper Proof Screws & Nuts
Thermometers

Threaded Rod Hanger
Tie Wire 21 gauge
Tie Wire Anchor
Toggle Wing
Transformer
Turbine Pumps
Uninterruptible Power Supply
VRV Fan Coils/Cond. Units
Wall Mounted Boiler
Wall Mounted Fountain
Water Coolers
Water Fountain Mounting Frame
Water Heater
Wing Toggle

SECTION 00.8200 – SAFETY & HEALTH MANAGEMENT PLAN PROJECT REQUIREMENTS

The Safety and Health Management Plan requirements are the minimum parameters that contractors must comply with. Contractors are required to prepare their own Safety Plan and comply with all applicable regulations.

As used in this Safety and Health Management Plan (herein referred to as "Plan"), "Contractor" shall mean the controlling Contractor (who has a contractual agreement with the Owner), who shall comply with these minimum requirements. The Contractor shall also agree to require each of their Subcontractors and Sub-subcontractors to comply with the minimum requirements of this Plan.

It is the responsibility of the Contractor to maintain total control of Safety to ensure that employees and the general public will be provided with a hazard free environment during Construction and renovation activities. This Plan does not relieve the Contractor of their responsibilities regarding the safety of their employees and the preservation of property. The Contractor agrees that he and all his Subcontractors or Sub-subcontractors shall be fully responsible for project Safety and Health Management. The Owner, the Construction Manager and the Architect shall not be responsible for any Safety precautions and programs in connection with the work.

The Contractor and Subcontractors of all tiers are solely responsible for safety on the job site and with respect to the work and indemnify, hold harmless and waive all claims against the Owner, the Construction Manager, and/or the Architect based on, arising out of or in any way involving any actual or alleged non-compliance with the Safety and Health Management Plan.

The Federal Occupational Safety and Health Act as well as other federal, state, and local regulations promulgated in the Interest of Safety are required by law and this Plan.

The Safety Requirements of this Plan is a supplementary document to all Government rules and regulations. It does not negate, abrogate, alter or otherwise change any provisions of those rules and/or regulations, and is intended to supplement and enforce the individual program of each Contractor and the overall safety effort. It is understood that the ultimate responsibility for providing a safe workplace rests with each individual Contractor.

I hereby acknowledge that I have received, read and evaluated the Project Safety and Health Management Plan and I hereby certify that I will ensure that at a minimum its requirements and conditions are fulfilled.

Company Name

Contractor – Project Manager

Contractor – Field Supervisor

Date

Date

Project Safety and Health Management Plan

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1.0 INTRODUCTION

The Safety and Health Management Plan requirements are the minimum parameters that contractors must comply with. Contractors are required to prepare their own Safety Plan and comply with all applicable regulations. These requirements have not been prepared by the Architect.

This Safety and Health Management Plan (herein referred to as "Plan") is intended to establish uniform policies and procedures for all Contractors, with the goal of reducing the frequency and severity of accidents. This Plan applies to all Work performed on the Project.

1. Contractor shall implement, maintain and adhere to a written Contractor Safety Program as required by the Bid Documents. Contractor, upon request, shall submit the Contractor Safety Program to the Owner or its representatives prior to commencement of the Work. In the event that the Contractor Safety Program does not comply with the requirements of this Agreement or of the Plan incorporated into this Agreement, the Contractor Safety Program shall be redrafted to comply with this Agreement and with the Plan, whichever provides the highest level of Safety. (The Contractor may, however, incorporate this Plan into their Safety Program for this project by reference.) One or more copies of the written Contractor Safety Program must be maintained on-site for employee review. Before the Contractor or any Subcontractor commences Work, the Contractor or Subcontractor, as applicable, shall make available to employees a copy of the Contractor Safety Program and the Contractor or Subcontractor, as applicable, and shall certify that prior to any employee, or any employee of any Subcontractor, beginning Work on the Project, the employees have been oriented with regards to the written Contractor Safety Program and have been directed by the Contractor or Subcontractor or its representatives to comply with Program requirements.
2. The Contractor, all Subcontractors and Sub-subcontractors shall assume all costs related, but not limited to, Personal Protective Equipment, Drug and Alcohol-Free Workplace Substance Abuse Program, all training requirements, etc.
3. Compliance with the Plan is a requirement of the Contract. Failure to comply will be considered a breach of Contract, subject to the remedies provided in the Contract including, but not limited to, withholding of progress payments or termination for cause.
4. The Contractor, all Subcontractors and Sub-subcontractors shall immediately correct unsafe conditions.
5. If the Contractor, any Subcontractors or Sub-subcontractor refuses to correct an unsafe condition, the Owner and/or its representatives is authorized to stop that portion of the Work until the Work can continue in accordance with the requirements of this Plan. The cost to bring the Work activity into compliance shall be incurred by the Contractor, Subcontractors and/or Sub-subcontractors and at no time shall the costs be charged to the Owner.
6. Each Contractor, all Subcontractors and Sub-subcontractors shall be responsible for payment of all fines, damages or other costs resulting from failure to comply with the Plan requirements. The Contractor shall reimburse the Owner for any fines, damages or costs incurred (including the costs of attorneys' fees for defense and appeals) arising out of the Contractor's operations.

2.0 General Requirements

Each Contractor, Subcontractor and Sub-subcontractor shall: (a) be solely responsible for the health, safety and security of employees and others under its control and/or supervision; and (b) comply with the terms and conditions of the Project Safety and Health Management Plan (herein referred to as "Plan") attached hereto and incorporated herein by reference as if fully set forth herein. The Project Manager and Field Supervisor of each Contractor and Subcontractor must execute a copy of the Plan certifying that each will ensure that the requirements of the Plan will be fulfilled. Notwithstanding anything to the contrary that is contained herein or in the Project Safety and Health Management Plan, the Contractor and Subcontractors of all tiers are solely responsible for safety on the job site and with respect to the work and indemnify, hold harmless and waive all claims against the Owner, the Construction Manager, and/or the Architect based on, arising out of or in any way involving any actual or alleged non-compliance with the Safety and Health Management Plan.

1. Contractor shall conduct its business in a professional manner to prevent the occurrence of incidents that lead to injuries or illnesses and/or equipment and property damage. Safety, health and security requirements for the Work under this Contract shall be administered by the Contractor and all of its Subcontractors and Sub-subcontractors in accordance with the following:
 - a. The importance of Safety with respect to all Work shall be recognized and accident prevention shall be an integral part of all planning and operations by the Contractor and its Subcontractors;
 - b. Contractor, Subcontractors and Sub-subcontractors shall conduct Work in accordance with: (i) the Occupational Safety and Health Act of 1970 (OSHA) and all additions, amendments and revisions thereto; and (ii) the Plan;
 - c. Contractor, Subcontractors and Sub-subcontractors shall follow all applicable federal, state and local laws/regulations pertaining to pollution control, water supply, fire protection, sanitation facilities, waste disposal and other related items;
 - d. Contractor, Subcontractors and Sub-subcontractors shall cooperate fully with the Owner and its representatives and all other Contractors and Subcontractors in providing and managing safety, health and security programs with respect to the Work;
 - e. Housekeeping shall be observed at all times and waste, debris and garbage shall be removed daily and placed in appropriate waste containers. All materials, tools and equipment shall be stored in a safe and orderly fashion.
 - f. Should Owner or its representatives notify Contractor of any safety non-compliance resulting in an unsafe act or improper equipment operation that puts the life and/or safety of Job Site personnel or other persons at risk, the Owner or its representatives shall have the right to immediately stop such Work or acts. Contractor shall correct the hazard or condition within the time specified prior to resuming Work in the area. Nothing in this Contract shall be construed as creating any duty on the part of the Owner or

the Construction Manager to inspect the Work for safety.

2. Safety Program

- a. Any Contractor shall provide a site Safety Representative knowledgeable in the areas of construction safety, health and fire prevention. The Safety Representatives shall have completed the OSHA 500 Construction and Outreach Training Program, or have equivalent experience or training, as a minimum. This individual shall have the authority to act as liaison with the Owner and/or its representatives, other Contractors and Subcontractors on all matters related to safety. This individual shall have full authority to ensure safe Work practices and to correct unsafe or hazardous conditions. All Subcontractors shall designate a member of supervision, who may have other duties, as its Safety Representative whose duty shall be the prevention of accidents. The Safety Representative shall have a current (within the last Two (2) Years) OSHA 10 Hour Construction Outreach Training Certificate.
- b. Contractor shall inform the Owner and/or its representatives of any federal or state inspections. Contractor shall provide Owner and/or its representatives with copies of all federal and state inspection reports, citations, penalties, abatement dates, and the like, with respect to the Work or any aspect of the Work under this Contract.
- c. The Contractor shall cooperate with the Owner and/or its representatives, who may periodically observe any aspect of the Work and/or the Project Work Site without prior notice.
- d. All lay down and storage areas shall be coordinated with the designated Project official prior to set-up of these areas. Contractor shall be responsible for the security of said area(s) and for all material, equipment and tools.
- e. Any media contact or responses to media inquiries shall be directed to the Project official designated by the Owner. Contractor and Subcontractor shall not discuss accidents, incidents or other related issues with the media.
- f. All employee vehicles shall be restricted to designated parking areas. All parking areas shall be coordinated with the designated Project official.
- g. Contractor shall follow all COVID 19 guidelines issued by OSHA, The Federal Government and the State Government.

3. Employee and Visitor Dress Requirements

- a. All projects shall enforce a One Hundred Percent (100%) hard hat requirement for all construction areas. All supervisors, employees and visitors shall be required to wear hard hats while on the Project Site.
- b. Contractor shall ensure that all workers wear durable work shoes and under no condition shall employ

ees wear shorts, tank tops, sleeveless shirts, clogs or footwear with large openings, street shoes, tennis shoes or sandals.

- c. All Contractors shall enforce the required no smoking policy for the entire project site at all times.
- d. Contractor shall follow all COVID 19 guidelines issued by OSHA, The Federal Government and the State Government.

4. Failure to Comply with Safety Regulations

- a. Failure to comply with the Contract Safety Requirements shall be deemed to constitute non-compliance with the Contract and may result in remedial action as provided by the Contract.
- b. If Contractor refuses to correct unsafe or unhealthy conditions or acts, the Owner and/or its representatives may take one or more of the following actions:
 - i. Instruct the Contractor, Subcontractor or Sub-subcontractor, who shall comply with said instructions, to cease the Work, or a portion thereof, until the condition is brought into compliance with Contract and Safety Requirements;
 - ii. Require Contractor, Subcontractor or Sub-subcontractor, who shall comply with said requirement, to replace or supplement its site Safety Representative and/or supervisory personnel, as appropriate;
 - iii. Stop payment for the Work being performed; and/or
 - iv. Correct the situation using another employee or Contractor and charge Contractor who shall pay for the expenses and costs incurred.
 - v. All costs associated with ensuring a safe and healthful Work environment, shall be borne by any non-compliant Contractor or Subcontractor, and costs will be charged to and/or assessed against the non-conforming Contractor or Subcontractor. Contractor, Subcontractor, and Sub-subcontractor shall be responsible for the payment of all fines and/or claims for damages levied against the Owner and/or its representatives for deficiencies relating to the conduct of the Contractor's Work.

3.0 Safety Policy Statement

Objective

The objective of this Plan is to reduce the frequency and severity of accidents on this Project. There are Three (3) sound reasons for this objective:

- 1. No endeavor is worthy if it should cause human suffering through disabling injury or loss of life.
- 2. A good safety record reflects the quality of management.
- 3. Poor accident experience increases cost, and results in a loss of profit.

Policy Statement

The safety of persons and property is of paramount importance to the Owner. This Plan will establish employee safety and health as an integral part of the overall success of this Project.

By Contract, the Contractor, all Subcontractors and Sub-subcontractors on the Project Site shall comply with the requirements of the Federal Occupational Safety and Health Act of 1970 (OSHA) and all additions and revisions thereto, as well as any other applicable federal, state and local requirements and this Plan.

The on-site supervisory personnel are responsible for the actions of those they supervise, for maintaining safe and healthy working conditions in their areas of responsibility, and for strictly enforcing all safety and health policies and regulations. All employees shall comply with these Rules and Regulations.

4.0 Responsibilities

The Contractor, all Subcontractors and Sub-subcontractors shall prevent accidents and are responsible for thorough safety and risk control training and instruction for their employees.

The prevention of accidents and protection of property shall receive management's top priority, support and participation.

General Overview

- Provide a safe environment where employees can perform high quality Work.
- Use Safety Planning as a tool to reduce injury to persons and damage to property.
- Provide inspections to locate and abate unsafe conditions and practices before they result in bodily injury or property loss.
- Protect the public and property adjacent to the Construction Site.
- Educate and Train employees through:
 - New Hire Safety Orientation
 - Weekly Safety meetings
 - Task-Specific Safety Training, (i.e., hazard communications (HAZCOM), fall protection, construction safety practices, trenching safety, confined space entry, etc.)
- Mandatory Personal Protective Equipment (PPE) Programs.
- Injury reporting and record keeping to maintain an up-to-date accident experience and trends analysis.
- Using accident investigation information to abate deficiencies and eliminate any additional losses.
- Return-To-Work (Modified Duty) Programs.
- Site-Wide One Hundred Per Cent (100%) Six (6) Foot Fall Protection Policy. **THERE IS A ZERO TOLERANCE POLICY ON FALL PROTECTION. ONE VIOLATION OF THE FALL PROTECTION POLICY WILL RESULT IN THE CONTRACTOR REMOVING THE VIOLATING EMPLOYEE FROM THE SITE FOR THE DURATION**

OF THE PROJECT. THE EMPLOYEE'S SUPERVISOR MAY BE REMOVED FROM THE SITE FOR FAILURE TO

ENFORCE THE FALL PROTECTION POLICY.

- Drug and Alcohol-Free Work Place Program.
- Contractor shall follow all COVID 19 guidelines issued by OSHA, The Federal Government and the State Government.

Contractor's Project Manager

The Contractor's Project Manager shall be responsible for:

- Promoting Total Job Safety with all employees and visitors;
- Accepting full and complete responsibility for the implementation and execution of the Plan on-site;
- Monitoring Contractor adherence to Plan Requirements; and
- Assisting in accident investigations with the Program's Safety Representative;

Contractor's Project Foremen

The Contractor's Project Foreman shall be responsible for:

- Setting a good safety example for workers;
- Using Pre-Task Planning, instructing workers on Safe Work Practices and Methods to prevent injury, damage to property and loss of productive time;
- Supplying and enforcing the use of Personal Protective Equipment (PPE);
- Familiarizing workers with the Safety Requirements applicable to their Work;
- Holding weekly Tool-Box Safety Meetings with their Work crews;
- Conducting daily Safety Inspections of their Work areas;
- Assisting in accident investigations with the Program's Safety Representative; and
- Assuring that proper first-aid treatment is administered to injured employees.

Contractors, Subcontractors and Sub-subcontractors

All Contractors, Subcontractors and Sub-subcontractors shall have overall responsibility for accident prevention and implementation of this Plan for their personnel.

Each Contractor, Subcontractor and Sub-subcontractor shall designate a member of supervision, who may have other duties, as their Safety Representative in accordance with the Contract Documents. The Safety Representative shall be knowledgeable and responsible for all applicable Safety Standards and site policies. This individual shall have, at a minimum, completed the OSHA 10 Hour Construction Outreach training course within the last Two (2)

Years.

The Safety Representative is responsible for performing Construction Safety Inspections and identifying and resolving any safety related concerns pertaining to their Work.

All employees shall be orientated to their company's Contractor Safety Program as well as to the Plan. Documentation of this training (which includes but is not limited to: Attendance roster, date of training and course content) shall be maintained on file.

Each Contractor shall be responsible for providing their Subcontractor's and Sub-subcontractor's Safety Representative with an emergency communication plan for use in emergency response and other safety related communications.

Although many existing hazards may be corrected through informal communications, all corrective actions must be documented.

Worker's Responsibilities

The Workers shall be responsible for:

- Working according to good safety practices as posted, instructed and discussed;
- Complying with the Plan and the Contractor's Safety Program;
- Using all required and provided safety devices;
- Reporting any unsafe situation or act to their supervisor and/or designated Safety Representative immediately;
- Maintaining a clean and safe Work area;
- Performing assigned duties in an alert manner, free of any impairment that may affect safety;
- Following the Site's Safety Program; and
- Reporting injuries immediately to their supervisor.

5.0 Safety Related Meetings & Training

Safety Meetings and Training shall be conducted by the Contractor, all Subcontractors and Sub-subcontractors. The following meetings and training shall be conducted, documented and maintained on file:

- Indoctrination (Orientation) Safety Training
- All new employees and visitors to the Construction Project shall be properly trained and oriented with regards to the Safety Plan, hazard recognition, Site-Specific Safety Requirements, emergency procedures, first-aid/medical procedures, assigned Panel of Physicians, etc.
- "Tool Box" Safety Meetings

- The Contractor, all Subcontractors and Sub-subcontractors shall conduct weekly Safety Training Meetings with all employees working on the Construction Project. This training shall be conducted by a supervisor or foremen.
- The meetings shall cover any Hazardous Work Conditions, unsafe Work practices that have been identified, safe working practices, review of accidents and near-misses that have occurred on the Construction Project and safety rules and regulations.
- This training shall be documented to include names of employees attending the training and an outline of all topics discussed.
- Weekly Progress Management Meetings
 - Safety shall have a portion of the agenda in all Progress Meetings for discussion of the previous week's safety issues and to discuss the current week's activities. Minutes from the Progress Meetings shall reflect safety items discussed and any proposed resolution to issues.
- Periodic Safety Management Meetings
 - Upon request by the Owner or its representatives, a Safety Management Meeting will be held periodically on the Construction Project to review on-going safety issues. The Contractor's, all Subcontractor's and Sub-subcontractor's Safety Representatives, Project Managers and Project Safety Representatives shall attend these meetings.
- If the Contractor, any Subcontractor or Sub-subcontractor has a lost-time injury, a representative of the respective company shall explain at the next Safety Meeting:
 - Why the accident occurred?
 - What corrective measures have been taken to prevent similar injuries from occurring?
 - What the claim status of the injured employee is?
 - What, if any, alternative (modified duty) work has been provided?
- Pre-Shift Hazard Recognition Training
 - The Contractor, all Subcontractors and Sub-subcontractors shall hold Pre-Shift Hazard Recognition Training with each work crew working under the following conditions:
 - One Hundred Percent (100%) Fall Protection
 - Scaffold Erection and Dismantling
 - Crane and all Material Hoisting Operations
 - Excavation and Trenching Operations
 - Non-Routine Work Operations, i.e. Emergency Procedures, Industrial Hygiene, etc.

- Confined Space Operations

6.0 Project Disciplinary / Corrective Procedures

General Statement. The Project Disciplinary/Corrective Procedures are intended to encourage compliance with the requirements of OSHA, other applicable federal, state and local requirement, and this Plan. Workers performing Work in an unsafe manner shall be subject to counseling, training, discipline, transfer or termination.

Responsibilities of Contractor and Subcontractors. Each Contractor and Subcontractor shall respond to each work injury and known unsafe act as follows:

- Investigation.** The Contractor or Subcontractor, as applicable, shall conduct a proper investigation to determine: (a) the nature of the unsafe act; (b) the reasons the unsafe act occurred; and (c) the identity of the individual(s) who engaged in or was responsible for the unsafe act. With respect to any individual employee or representative who was identified as having engaged in or being responsible for an unsafe act, the following information shall be among the information reviewed and considered:
 - The individual's past training and experience as is relevant to the unsafe act committed;
 - The individual's prior disciplinary record;
 - The individual's prior record with respect to: (i) engaging in or allowing unsafe acts, and (ii) following instructions and directions; and
 - The individual's degree of culpability.
- Prevention.** The Contractor or Subcontractor, as applicable, shall take action that is reasonably calculated to insure that:
 - The unsafe act will not be repeated; and
 - That the individual(s) responsible for engaging in or allowing the unsafe act to occur will not engage in or allow unsafe acts to occur in the future.
- Disciplinary/Corrective Options.** The options available to Contractors and Subcontractors when taking action that is reasonably calculated to ensure that the unsafe acts will not be repeated and that responsible individuals will not engage in or allow unsafe acts to occur include:
 - Additional training for workers in general and/or to the responsible individual in particular;
 - Job performance counseling of the responsible individual(s);
 - Verbal Warning (which shall be documented);
 - Written Warning;
 - Suspension from Work without pay;
 - Transfer off the Project; and

- g. Discharge from employment.
4. **Guiding Principles.** Contractors and Subcontractors shall decide which option(s) to exercise in accordance with the following guiding principles:
- a. Nothing in this Plan shall be construed to require any Contractor or Subcontractor to violate the terms or conditions of any applicable law, collective bargaining agreement or employment contract;
 - b. If any individual engages in a repeated unsafe act(s), a repeated violation(s) of the Contract, a repeated violation(s) of OSHA requirements, or a repeated violation(s) of this Plan, the actions taken by the Contractor or Subcontractor, as applicable, shall be progressive in severity and consequence;
 - c. Nothing in this Plan requires progressive discipline as a precondition to any suspension, transfer or discharge from employment and the Contractor or Subcontractor may impose a suspension, transfer or discharge for safety violations if it so chooses without having engaged in prior progressive discipline;
 - d. It is expected that individuals who engage in or who are responsible for any unmitigated life threatening conduct or for willful disregard to the safety requirements of this Plan shall be subject to immediate discharge or permanent transfer off the Project.
5. **Follow Up.** Contractors and Subcontractors shall take follow up action to ensure that the actions taken are effective. If it is observed that the actions originally taken have not been effective to prevent a repeat of the particular unsafe act or to prevent the particular individual(s) from engaging in that or other unsafe acts, the Contractor or Subcontractor, as applicable, shall take more aggressive disciplinary and corrective action.
6. **Documentation.**
- a. Each Contractor and Subcontractor shall fully document the following:
 - Known unsafe acts;
 - The investigation undertaken in accordance with these procedures;
 - The disciplinary and/or corrective action taken;
 - The rationale for choosing the particular action taken;
 - The follow up action that is planned;
 - The follow up action that is taken; and
 - The results of the follow up action.
 - b. The documentation shall be maintained in an organized manner by each Contractor or Subcontractor as applicable and in accordance with the Record-Keeping requirements of this Plan. Records of discipline, job counseling and training shall be placed in the personnel file of the employee. Copies of the documentation shall be provided to the Owner and/or its representa

tives.

7.0 Record-Keeping and Files

The Contractor, all Subcontractors and Sub-subcontractors shall maintain a master or central file for safety and health related documentation on the Job Site. Files shall be maintained in such a manner that distinguishes each Contractor and their Subcontractors and Sub-subcontractors.

The Owner and/or its representatives shall have the right to review all documentation at any time upon request. The Contractor shall give full cooperation during these reviews.

The following documentation shall be in the Safety Files:

- The Contractor Safety Plan.
- Hazard Communication Program, including current Material Safety Data Sheets (MSDS).
- Site Emergency Plans.
- All required safety & health permits.
- Weekly Tool Box/Tailgate Safety Meeting reports – including meeting topic(s) and employee attendance/sign-up sheets.
- Specific job hazard worker training.
- Job Site Safety Inspection reports – including documentation of corrective measures for closure.
- Equipment inspection reports.
- Crane inspection reports – daily and monthly (annual certification reports required prior to equipment operation).
- Employee orientation training records.
- Accident investigation reports, including near misses.
- Job Hazard Analysis.
- Competent person qualifications.
- Written Safety Violations.

8.0 Job Site Inspections

Inspections

Daily Safety and Health Inspections shall be continually conducted by the Contractor, all Subcontractors and Sub-subcontractors for each of their respective Work areas on the Job Site. Documentation of all identified and corrected deficiencies shall be maintained on file.

Corrective Measures

Corrective Measures to abate all deficiencies shall be completed immediately if life-threatening/serious conditions exist or no later than the end of the working shift for non-life threatening/serious conditions. All Work shall be stopped until imminent danger hazards have been abated. Documentation of these corrective measures shall be provided to the Program's Safety Representative.

If a deficiency can not be abated within the same shift, a letter shall be provided to the Owner or its representatives outlining the reason(s) why and the step(s) taken as an interim measure to control the potential hazard.

Non-Abatement

If Contractor, Subcontractor or Sub-subcontractor fails to make corrections to identified deficiencies in a timely manner, the Owner or its representatives will:

- Notify the Contractor in writing to take prompt corrective action to eliminate Construction Safety and Health concerns. Written notification will describe specific contract or code violations;
- Resolve outstanding Construction safety issues and maintain documentation of corrective actions;
- Report in writing to the Contractor, the name(s) of the individual(s) and their supervisor(s) who are observed to violate Construction Safety Requirements, with copies to the Project File. If necessary, the Owner or its representatives may require the Contractor to remove these individual(s) and/or their supervisor(s) from the Job Site.

Stoppage of the Work

The Owner and/or its representatives shall be authorized to order, at the Contractor's expense, a stoppage of the Work until unsafe conditions are abated.

9.0 Drug and Alcohol Free Workplace Program

General Statement. The Owner is committed to maintaining a drug and alcohol free workplace. The Owner has a vital interest in maintaining safe, healthful and efficient working conditions. Alcohol and illegal drug use or possession pose a serious threat to workplace safety and health. Impairment from alcohol and the use and possession of illegal drugs pose a danger. The costs associated with implementing the Drug and Alcohol Free Workplace Program, (herein referred to as "Program") shall be the responsibility of the Contractor, Subcontractor or Sub-subcontractor, as applicable.

Responsibilities of Contractor and Subcontractors. Contractors and subcontractors shall adopt, implement and enforce drug and alcohol free workplace programs that comply with the following minimum conditions:

1. Employee Prohibitions
 - a. No covered employee shall report for duty or remain on duty (i) while having an alcohol concentration of 0.04 or greater; (ii) while possessing alcohol; (iii) while using alcohol; or (iv) within Four (4) Hours after using alcohol.

- b. No covered employee shall report for duty or remain on duty when the employee uses any controlled substance (except when the use is pursuant to the written instructions or prescription of a physician who has advised the employee that the substance does not adversely affect the employee's ability to work safely) or tests positive for controlled substances.
 - c. No covered employee required to take a post-accident alcohol test under this program shall use alcohol for Eight (8) Hours following the accident, or until he or she undergoes a post-accident alcohol test, whichever first occurs.
 - d. No covered employee shall refuse to submit to a post-accident alcohol or controlled substances test required under this program or a reasonable suspicion alcohol or controlled substances test required by this program, or a follow-up alcohol or controlled substances test required under this program.
2. Employee Duties
 - a. Covered employees shall comply with all mandates and prohibitions contained in this Program.
 - b. Covered employees shall cooperate fully with all required testing and shall promptly report to all testing as directed.
 - c. Covered employees are required to notify the Contractor or Subcontractor as applicable if they are taking any therapeutic drugs and shall supply a written certification on a form provided by the Contractor or Subcontractor from the physician prescribing the drug(s) that the substance(s) will not adversely affect the employee's ability to work safely and to comply with the safety requirements on the job.
3. Consequences of Covered Employees Engaging in Substance Use-Related Conduct.
 - a. Consistent with contractual, legal and constitutional requirements, a determination shall be made by the Contractor or Subcontractor, as applicable, as to the appropriate disciplinary action, if any, to be imposed upon any covered employee who violates any of the prohibitions or mandates of this Program. Nothing in this Program shall be construed to limit the authority of any Contractor or Subcontractor to impose discipline, including discharge, as it shall determine so long as the minimums set forth in this Program are satisfied. Unless prohibited by law, contract or collective bargaining agreement, any employee who engages in any of the following conduct shall not be permitted access to the Construction Project and shall not be permitted to engage in any of the Work:
 - Fails a drug test;
 - Possesses illegal drugs;
 - Refuses to submit to a drug or alcohol test;
 - Is in possession of alcohol on the Work Site; or
 - Is convicted or pleads guilty or *nolo contendere* of illegal drug use, possession or trafficking.
 - b. Any covered employee tested under this Program who is found to have an alcohol concentration of 0.02 or greater but less than 0.04 shall be suspended without pay at least until the start of the employee's next regularly scheduled duty period that is at least Twenty-Four (24) Hours following the

administration of the test.

- c. Any covered employee: (i) who reports or remains on duty while having an alcohol concentration of 0.04 or greater, possessing alcohol, using alcohol or having used alcohol within Four (4) Hours of reporting to Work; or (ii) who reports or remains on duty when the employee uses or has used any controlled substance (except when the use is pursuant to the written instructions or prescription of a physician who has advised the employee that the substance does not adversely affect the employee's ability to safely Work and the employee has so advised the Contractor or Subcontractor) or tests positive for controlled substances; or (iii) who consumes alcohol in contravention of a post-accident alcohol test requirement or refuses to submit to any drug or alcohol test required under this Program, and who is not to be discharged from employment, shall be suspended without pay and shall not be reinstated until the following requirements have been met:
- The employee has been advised of the resources available to the employee in evaluating and resolving problems associated with the misuse of alcohol and the use of controlled substances, including the names, addresses and telephone numbers of substance abuse professionals and counseling and treatment programs; and
 - The employee has been evaluated by a substance abuse professional who shall determine what assistance, if any, the employee needs in resolving problems associated with alcohol misuse and controlled substances use; and
 - The employee has undergone a return-to-work alcohol test with a result indicating an alcohol concentration of less than 0.02 if the conduct involved alcohol, or a controlled substance test with a verified negative result if the conduct involved a controlled substance; and
 - If the employee has been identified as needing assistance in resolving problems associated with alcohol misuse or controlled substances use, the employee shall be evaluated by a substance abuse professional to determine that the employee has properly followed a rehabilitation program as prescribed.
4. Mandatory Drug and Alcohol Testing. Contractors and Subcontractors shall, as part of this Program, adhere to the following Post-Accident, Reasonable Suspicion, Return-to-Work and Follow-Up drug and alcohol testing of covered employees:
- a. Post-Accident Testing. As soon as practicable following an accident in connection with the Work involving any personal injury of the employee or of another requiring medical attention or first aid, or any property damage greater than One Thousand Dollars (\$1,000), the employee shall be tested for alcohol and controlled substances.
- An employee who is subject to post-accident testing under this policy shall remain readily available for such testing or may be deemed by the Contractor or Subcontractor, as applicable, to have refused to submit to testing;
 - If a post-accident alcohol test is not administered within Two (2) Hours following the accident, the Contractor or Subcontractor as applicable, shall prepare and maintain a record stating the reasons the test was not promptly administered. If the test is not administered within Eight (8) Hours following the accident, attempt to administer the alcohol test shall cease and the Contractor or Subcontractor, as applicable, shall prepare and maintain a record setting forth why testing was not performed.

- If a post-accident controlled substances test is not administered within Thirty-Two (32) Hours following the accident, attempts to administer the test shall cease and the Contractor or Subcontractor, as applicable, shall prepare and maintain a record stating the reasons why the test was not administered within the required time.
 - A breath or blood test for the use of alcohol or a urine test for the use of controlled substance conducted by federal, state or local officials or policy having authority to conduct such testing shall be considered to meet the requirements of this Program if the results will be turned over to the Contractor or Subcontractor.
- b. Reasonable Suspicion Testing. A covered employee shall be required to submit to an alcohol and/or controlled substances test when the Contractor or Subcontractor, as applicable, has reasonable suspicion that the employee is using or has used alcohol or controlled substances in violation of the prohibitions or mandates of this Program.
- The determination that reasonable suspicion exists to require an employee to undergo testing must be based on specific, contemporaneous, articulable observations concerning the appearance, behavior, speech or body odors of the employee. The observations may include indications of the chronic and withdrawal effects of controlled substances. Reasonable suspicion as to alcohol use may be based only on observations made while the employee is working or just before the employee begins Work or just after the employee stops working.
 - The Contractor and Subcontractors shall designate individuals who shall have obtained necessary training that covers the physical, behavioral, speech and performance indicators of probable alcohol misuse and use of controlled substances. Only those so trained are permitted to make the determination that can lead to Reasonable Suspicion Testing.
 - Reasonable Suspicion Testing may not be performed by the individual who made the determination that there was reasonable suspicion for testing.
 - A written record shall be prepared and maintained setting forth the basis and observations for the reasonable suspicion leading to the testing. With respect to suspicion related to controlled substances, such record shall be made and signed by the individual who made the observation within Twenty-Four (24) Hours of the observed behavior or before the results of the controlled substances test are released, whichever is earlier.
 - Reasonable Suspicion Alcohol Testing shall be required while the employee is working, just before the employee begins work, or just after the employee stops working. If an alcohol test is not administered within Two (2) Hours following the determination that reasonable suspicion exists, the Contractor or Subcontractor shall prepare and maintain a record stating the reasons the test was not promptly administered. If the test is not administered within Eight (8) Hours following the determination that reasonable suspicion exists, attempts to administer the alcohol test shall cease and the Contractor or Subcontractor, as applicable, shall prepare and maintain a record setting

forth the reasons the test was not administered. Notwithstanding the absence of a reasonable suspicion alcohol test, where there was reasonable suspicion of alcohol use, the employee shall not be permitted to work until:

- (1) An alcohol test is administered and the employee's alcohol concentration measures to less than 0.02; or
 - (2) Twenty-Four (24) Hours have elapsed following the determination of reasonable suspicion.
- c. Return-to-Work Testing. No employee may return to work after engaging in conduct prohibited by this Program until after he or she has, as appropriate, undergone an alcohol test with a result indicating an alcohol concentration of less than 0.02 or a controlled substances test with a result indicating a verified negative result for controlled substance use.
- d. Follow-Up Testing. Any employee who is in need of assistance in resolving problems associated with alcohol misuse and/or use of controlled substances shall be subject to unannounced Follow-up Testing as directed by a substance abuse professional. Follow-up Testing shall be conducted only when the employee is working, just before the employee begins work, or just after the employee has stopped working.

5. Miscellaneous

- a. A "covered employee" under this program shall mean any person who is an employee of the Contractor or any Subcontractor and who engages in any Work that is subject to the safety requirements of the Contract or this Plan and any employee of any Contractor or any Subcontractor who operates a commercial vehicle as defined by law in connection with any of the Work.
- b. The means, manner and methods of the testing procedures for alcohol and substances under this Program shall be in accordance with the procedures set forth in Title 49, Part 40 of the Code of Federal Regulations, which, by this reference, are hereby incorporated herein by reference as if fully set forth herein. Without intending to limit the generality of the foregoing requirement, preparation for testing, specimen collection procedures, laboratory personnel requirements, laboratory analysis procedures, quality assurance and quality control procedures, reporting and review of results procedures, protection of employee records procedures, individual access to test and laboratory results, use of certified laboratory requirements, breath alcohol technician requirements, breath alcohol device requirements, quality assurance plans, procedures for confirmation of tests, refusal to test and uncompleted test procedures, inability to provide an adequate amount of breath, invalid test procedures, etc., as governed by 49 CFR, Part 40, shall all be implemented by Contractors and Subcontractors with respect to any drug or alcohol test administered in accordance with this Program.
- c. Work Related Injuries. Contractors and Subcontractors shall require Post-Accident Testing in accordance with the terms and conditions of this Program in the event of any accident that results in a work-related accident. The Post-Accident Testing may be arranged by the Contract

tor or Subcontractor or may be arranged by the Workers' Compensation carrier. In either event, the procedures contained in 49 CFR, Part 40, shall be followed.

- d. Employee Training. Each Contractor and Subcontractor shall require that all employees are trained and periodically retrained in the requirements of the Drug and Alcohol Free Workplace Program. This training shall be properly documented.

10.0 Accident/Injury Management

Accident Reporting

All accidents resulting in employee injury, property damage, or involving the public shall be reported immediately to the project officials in accordance with the claims reporting instructions provided by the Contractor's Insurance Administrator. All accidents resulting in injuries or illnesses shall be thoroughly investigated by the ***injured worker's supervisor***.

The Contractor shall complete an Accident Investigation Report for all accidents resulting in employee injury, property damage, public involvement or near miss incidents. All Contractors shall cooperate with the Owner and its representatives in the investigation, analysis and defense of any claim, accident, occurrence or insured loss.

Accident Investigation

A formal written "Accident Investigation Report" and "First Report of Injury" shall be completed by the end of the working day/shift of the accident. Identification and review of accident causes shall be completed, identifying corrective actions, persons responsible for corrective actions and date of completion shall be established. Follow-up documentation verifying corrective action shall be required.

Copies of all accident investigation documents shall be maintained on file.

11.0 Workers' Compensation Claims Cooperation

Responsibilities of Contractor and Subcontractors

Contractors and Subcontractors shall adopt, implement and enforce a Workers' Compensation Program that complies with the following minimum conditions:

1. **Compliance with Posting and Notice Requirements.** Each Contractor and Subcontractor shall comply with all posting and notice requirements imposed by Pennsylvania's Workers' Compensation Act. Contractors and Subcontractors shall maintain documentation proving that they have complied with these requirements.
2. **Posting and Designation of Physicians.** In the event that the Workers' Compensation insurer has provided a list of designated physicians to the Contractor and/or Subcontractor, the Contractor and Subcontractor shall properly post and provide notice of the designated physicians to employees in accordance with the requirements of the Workers' Compensation Act. Contractors and Subcontractors shall maintain documentation proving that they have complied

with these requirements. Where a designated physician panel is in place, Contractors and Subcontractors shall take action to ensure that injured employees receive treatment from the designated physicians in accordance with the law.

3. **Notice of Workers' Compensation Injuries.** Contractors and Subcontractors shall receive reports of occupational injuries and diseases in accordance with the terms and conditions of the Workers' Compensation Act and shall promptly complete and file the necessary forms and reports with the Commonwealth and the insurer or its representative.
4. **Participation in Claims Meetings.** Contractors and Subcontractors shall participate in claims review meetings when and if scheduled by the Workers' Compensation insurer or its representative.
5. **Return-to-Work Programs.** Contractors and Subcontractors shall cooperate with the Workers' Compensation insurer or its representative to return injured employees to Work as soon as possible consistent with their medical capabilities. Contractors and Subcontractors shall consider and offer modified Work to employees when such Work is available or can reasonably be made available.
6. **Litigation Cooperation.** In the event that there is any litigation growing out of a Work-related injury, each Contractor or Subcontractor, as applicable, shall cooperate with the insurer, its representatives and attorneys, in the defense of the claim and shall make necessary evidence and witnesses available for hearing preparation and testimony.
7. **Nothing in this Plan shall be construed as a requirement that any Contractor or Subcontractor take any action that is in violation of law, any applicable collective bargaining agreement or contract.**

12.0 General Safety and Health Policies

All employees shall use protective equipment prescribed by federal, state, and local laws and by this Plan to control hazards or other exposure to illness or injury. **Any employee who willfully refuses to use prescribed protective equipment designed to protect them or willfully damages such equipment shall be subject to disciplinary action which may include immediate removal from the Job Site.**

Competent Person Requirements

The Contractor, all Subcontractors and Sub-subcontractors shall develop and maintain documentation identifying employee(s) designated as a competent person(s). The qualifications for Competent Persons are identified in the Subpart of OSHA 29 CFR 1926. NOTE: Various subparts of OSHA have interpretations as to the qualifications and training required to be designated as a Competent Person (i.e., Subpart P – Excavations; Subpart L – Scaffolding; etc.)

Personal Protective Equipment

Eye and Face Protection

Contractors, Subcontractors and Sub-subcontractors shall provide, maintain and manage eye and face protection for

their employees in accordance with OSHA Construction Standards 29 CFR 1926.102.

The Owner and/or its representatives reserve the right to mandate a 100% Eye Protection Policy throughout designated phases of the Work or specific areas of the Project if it is deemed necessary.

Only clear safety glasses shall be worn inside any building(s).

Head Protection

All Construction workers shall wear hard hats which meet ANSI Z 89.1-1986, One Hundred Percent (100%) of the time while on the Construction Site. Hard hats should display the company decal where the employee works.

All delivery personnel, vendors and visitors shall wear approved hard hats while on the Construction Site.

Hearing Protection

All Work areas identified as high noise exposure shall be properly posted to warn employees of the exposure.

Appropriate hearing protection shall be worn in Work areas where noise levels are 85 dBA or greater.

Respiratory Protection

Contractors whose Work activities warrant that employees wear respiratory protection, shall establish and implement a Respiratory Protection Program. The Program shall meet the requirements set forth in 29 CFR 1926.134.

Foot Protection

All personnel on the Construction Site shall wear leather hard-soled work boots. No one is permitted to wear sneakers (including ANSI approved), tennis shoes or athletic shoes of any type, sandals, high heels or open toed shoes on the Construction Site.

Clothing

Suitable clothing for Construction Work shall be worn on the Construction Site. Shirts with sleeves (at least t-shirt (4 inches in length) and full-length pants shall be required. Polyester or similar material is not allowed. Shorts, sweat pants or tank-tops are not allowed.

Fall Prevention

The Fall Prevention Policy is based on the following observations:

- All fall hazards can be eliminated, prevented and/or controlled.
- To control fall hazards is morally responsible, good business and cost effective.
- The establishment and implementation of a Fall Prevention Program is the most effective way to provide a continuous process to identify, evaluate and control fall hazards.

No person/employee shall be exposed to a fall hazard from any elevation greater than Six (6) Feet. In addition, all other construction activities that involves fall protection/prevention shall be performed in accordance with 29 CFR 1926, Subpart M:

- Employees exposed to a fall distance of Six (6) Feet or more (no exceptions), or less where the distance has a likelihood of a serious or fatal injury, shall be protected by the means of a Fall Protection System. **THERE IS A ZERO TOLERANCE POLICY ON FALL PROTECTION. ONE VIOLATION OF THE FALL PROTECTION POLICY WILL RESULT IN THE CONTRACTOR REMOVING THE VIOLATING EMPLOYEE FROM THE SITE FOR THE DURATION OF THE PROJECT. THE EMPLOYEE'S SUPERVISOR MAY BE REMOVED FROM THE SITE FOR FAILURE TO ENFORCE THE FALL PROTECTION POLICY.**

- Fall prevention controls shall be based on the principle that engineering and design techniques for the elimination and prevention of fall hazards shall be utilized above and beyond the use of Personal Fall Protection Equipment. When it is not feasible to provide fall prevention controls, workers exposed to falls shall be equipped with:

- ◆ Only full-body harnesses and Lanyards with shock absorbers with locking snap-hooks. Body Belts are not permitted on the Project. All Personal Fall Protection Equipment shall be compatible and all manufacturers equipment guidelines shall be understood and followed.
- ◆ Appropriate anchorage points, capable of supporting Five Thousand (5,000) Pounds per worker attached shall be properly installed.

- Contractors performing structural erection activities (such as precast concrete and steel erection) shall provide upon request a "Task Specific Fall Protection Plan" which complies with the Six (6) Foot Fall Protection Requirement. **THE ABOVE STATED ZERO TOLERANCE POLICY FOR FALL PROTECTION ALSO APPLIES TO STEEL ERECTION.**

- Ladders (straight, extension & step) shall be used only for employee access and short duration miscellaneous light Work where 3-point contact with the ladder can be maintained. If ladders are to be used for performing long duration heavy Work at heights Six (6) Feet and greater (or any height where the likelihood of a serious or fatal injury exists), the fall hazards shall be controlled through the use of fall protection.

Excavations and Trenches

Excavations shall be performed in accordance with 29 CFR 1926, Subpart P:

- A safe means of access and egress shall be provided for employees from excavations and trenches regardless of their depth at intervals that provide no more than Twenty-Five (25) Feet of lateral travel.

- A Competent Person shall be present anytime excavation Work is performed. The Competent Person shall inspect each excavation before the start of each shift and as conditions change (rain run-off, seeping water, freezing/thawing conditions, vibration, atmospheric conditions, etc.). All inspections shall be documented and maintained on file.

- All soils shall be classified as type "C" until the Competent Person can demonstrate the soil can be reclassified as another type, using acceptable soil analysis practices.

- All open excavations and trenches shall be barricaded or adequately guarded at all times with highly visible material.

- Equipment, material and spoil piles shall not be placed closer than Two (2) Feet from the excavation

or

trench edge.

- Atmospheric testing shall be conducted and completed in excavations and trenches where possible hazardous conditions exist prior to employees entering.

Electrical

Electrical Work shall be performed in accordance with 29 CFR 1926, Subpart K:

- Only qualified electricians familiar with code requirements shall be allowed to perform electrical Work.
- Extension cords used with portable electrical tools and appliances shall be heavy duty and of the three-wire type. Cords shall be covered, elevated or otherwise protected from damage which would create a hazard to Construction Site Personnel.
- Electrical cords and equipment shall be visually inspected before each shift for external defects. All damaged and defective cords shall be removed from service immediately (this includes cords with the ground prong missing). Cords shall be repaired with approved heat-shrink methods, electrical tape is not permitted.
- All temporary electrical tools, cords and equipment shall be properly protected by Ground Fault Circuit Interrupters (GFCI). All portable generators shall have properly functioning GFCI outlets. GFCI receptacles shall be tested monthly with a multi-range GFCI tester (the tests shall be documented) to insure the GFCI is properly functioning and protecting the worker.
- Electrical equipment or machinery shall be de-energized and rendered inoperative by the electrician performing Work on the system. Any company performing Work on electrical equipment shall develop a "task-specific" lockout/tagout safety plan. Lockout/Tagout shall be performed in accordance with 29 CFR 1910.147. The failure to follow lockout/tagout procedures will result in immediate removal from the Project.

Scaffolds

Scaffold Work

- Lean-to scaffolds and makeshift platforms shall be prohibited.
- Scaffolds shall not be used for storage of materials except material currently being used.
- All scaffolds shall be adequately designed to carry, without failure, Four (4) Times the maximum intended load. At no time shall any scaffold be overloaded.
- All scaffolds shall be maintained in safe condition. Scaffolds damaged or weakened, from any cause, shall be immediately removed from service.
- Scaffolding more than Six (6) Feet above the working surface shall have standard guardrails and toeboards properly installed.

- Each Contractor working with scaffolds shall designate, in writing, the name of their designated Competent Person for erection, dismantling, altering and moving of scaffolds.
- Scaffolds shall be inspected prior to each shift by the designated Competent Person.
- Proper access shall be provided for all employees to working areas. Employees shall not climb on cross-bracing to access scaffold.
- Scaffolds shall be erected on sound, rigid surfaces. Base-plates and mud-sills shall be used with all scaffolds. Unstable objects such as brick, block, etc. shall not be used to support scaffolds.

Welding and Cutting

Welding and Cutting Work shall be performed in accordance with 29 CFR 1926, Subpart J:

- Welding leads and cutting hoses shall be kept clear of walkways and stairways.
- Flash arrestors shall be installed on both oxygen and acetylene hoses at the regulator connection.
- All welders shall wear approved eye and head protection when welding. All personnel assisting the welder shall also wear approved protective eye protection.
- Prior to welding or cutting a "20-ABC" rated fire extinguisher shall be within easy reach of the worker. A fire watch shall be stationed at all locations where sparks and/or flames may fall to a lower floor/work area or to another side of a wall.
- A suitable cylinder truck, with chain, shall be used to keep cylinders from being knocked over while in use.
- Spent welding rods shall be picked up and disposed of daily.
- When practical, all welding and cutting operations shall be shielded by non-combustible or flame-proof screens.
- Oxygen and acetylene cylinders shall not be stored inside buildings.
- Rubber boot protectors shall be provided on all welding leads where they make connections at the welding machine.

Cranes

Crane Operations shall be in accordance with 29 CFR 1926, Subpart N:

The following requirements shall be followed by the Contractor and all tiered Subcontractors for all cranes entering the Construction Area:

- All hydraulic and lattice boom cranes operating on the Construction Site shall be equipped with a functioning "anti-two blocking" device.
- The operator shall know the weight of every suspended load, regardless of size.
- All cranes shall have an annual inspection (completed and certified by a nationally recognized crane inspection organization).

All crane operators shall be qualified prior to operating any crane on the Job Site:

- Operators shall meet the requirements of Chapter 5, ANSI B30.5c-1992.
- An up-to-date résumé detailing the operator's qualifications (i.e., years of experience, previous jobs worked on, etc.) shall be maintained in the Contractor's and/or any Subcontractors and Sub-subcontractor's files at the Job Site.
- Before any operator is allowed to operate a crane on the Construction Site, the Contractor and/or Subcontractors and Sub-subcontractors shall have the operator perform a functional operation appraisal to ensure the operator is qualified. This shall be documented and maintained on file.

Cranes shall be inspected for safety-related deficiencies and defective/damaged parts that effect the safe operation of a crane. Cranes shall be immediately removed from service until repairs can be made. The following inspection criteria shall be followed:

- After set-up and prior to initial lift;
- Before each shift;
- After every malfunction;
- Manufacturer's inspection guidelines.

Motor Vehicles and Heavy Equipment

Heavy Equipment Work shall be performed in accordance with 29 CFR 1926, Subpart O:

- All employees who operate equipment and vehicles shall have sufficient experience with that particular piece of equipment and shall be trained in the safe operation of that equipment.
- All heavy equipment including: cranes, forklifts, dozers, endloaders, etc. shall have a reverse signal/back-up alarm audible above surrounding background noise.
- No one shall ride in a vehicle or mobile equipment unless they are in a seat (exceptions if the equipment is designed to be operated while standing up). Riding in the back of pick-up trucks shall not be allowed.
- All motor vehicles and equipment brought on-site shall be thoroughly inspected and shall be in safe operating condition.

Demolition Activities

All Contractors performing any removal or demolition activities shall ensure compliance with OSHA 29CFR 1926.62 rules and regulations to prevent any lead contamination.

END OF SECTION 00 8200

NON-COLLUSION AFFIDAVIT

A. INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

1. This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid. According to the Pennsylvania Anti Bid-Rigging Act, 73 P.S., subsection 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 the final decision on price(s) and the amount (s) 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 non-competitive bid, and any 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.

B. NON-COLLUSION AFFIDAVIT (COMPLETE FORM ON NEXT PAGE)

UPPER POTTS GROVE TOWNSHIP
NEW MUNICIPAL COMPLEX

NON-COLLUSION AFFIDAVIT
DOCUMENT 00.9000

STATE OF: _____

CONTRACT/BID #: _____

COUNTY OF: _____

I state that I am _____ of _____ authorized
(Title) (Firm Name)
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 prices(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 bidder.

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 a 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 non-competitive 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 non-competitive bid.

5. _____, its affiliates, subsidiaries, officers, directors, and employees are not
currently _____
(Firm Name)

under investigation by 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 the above Representations
(Firm Name)

are material and important, and will be relied on by **Upper Pottsgrove** Township in awarding the contract for which this bond
is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent
concealment from **Upper Pottsgrove** Township of the true facts relating to the submission of bids for this contract.

(Signature)

(Title)

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____ 20____.

SECTION 01.1000- SUMMARY

PART 1- GENERAL

- **THE PROJECT**

- A. The Project scope includes but is not limited to; Sitework, General, Mechanical, HVAC and Electrical Construction for the New Municipal Complex at Upper Pottsgrove Township.
- B. Prime Contracts are separate contracts that represent significant construction activities performed concurrently with and closely coordinated with construction activities performed on the Project under other prime Contracts.

- **WORK COVERED BY CONTRACT DOCUMENTS**

Architect Identification: The Architect, acting as a consultant on this Project is the following:

**RANDY GALIOTTO, AIA
ALLOY5 ARCHITECTURE
530 WEST BROAD STREET,
BETHLEHEM PA 18018**

A. Type of Contract:

1. Project will be constructed under coordinated, concurrent multiple contracts. See Section 01.1250 "Summary of Multiple Contracts" for a description of work included under each of the multiple contracts and for the responsibilities of Project coordinator. Prime Contracts for this Project include: the following:

- A. SITEWORK CONSTRUCTION CONTRACT**
- B. GENERAL CONSTRUCTION CONTRACT**
- C PLUMBING CONTRACT, WHICH INCLUDES FIRE PROTECTION**
- D. HEATING, VENTILATING AND AIR CONDITIONING (HVAC) CONTRACT**
- E. ELECTRICAL CONTRACT**

- **WORK SEQUENCE**

A. All work shall be conducted as indicated on the Drawings and elsewhere in the Contract Documents. Milestone dates include:

1. OUT TO BID:	Monday 3/31/25
2. RFI CUT-OFF DATE:	Monday 5/12/25
3. BIDS DUE:	Thursday 5/22/25
4. NOTICE TO AWARD:	Tuesday 6/17/25
5. BOND AND INSURANCE DUE:	Thursday 7/10/25

6. EXECUTED CONTRACT:	Thursday 7/10/25
7. NOTICE TO PROCEED:	Friday 7/11/25
8. SUBSTANTIAL COMPLETION:	Monday 6/15/26
9. FINAL COMPLETION:	Tuesday 7/16/26

B. The work shall be conducted in the phases shown above and shall be in compliance with the milestone dates listed. Any deviation from these phases or the work and milestone dates included in each phase shall be subject to approval of the Owner.

C. The CPM schedule and coordination and sequence of work shall be in full compliance with the project phasing and milestone dates.

D. The entire work of all the contracts shall be substantially complete no later than the date indicated, based on a Notice to Proceed issued no later than date indicated. If the notice to proceed or start of any phase is delayed by the Owner, all subsequent phasing dates, substantial and final completion dates will be extended by the exact same number of days of the delay. No additional time other than the extension noted above and no costs will be considered for such approved delay. Furthermore, by submitting a bid and executing a contract with the owner, the contractor forfeits all rights to delay claims should the Notice to Proceed be delayed for any reason at all and the contractor understands that at any time the owner reserves the right to move the start date of **Friday, 7/11/25 and the corresponding final completion being Tuesday 7/16/26**. Notwithstanding anything in the Project Documents or contracts, Owner reserves the right to terminate the Project and terminate and void all contracts if the **Notice to Proceed is not issued by Owner on or before 8/11/25**.

E. Work in the building shall be performed in a sequence to ensure that all building systems are systematically installed in an efficient manner. The mechanical and electrical rooms shall be constructed in an early sequence to permit rough-in.

F. All work must be completed in a sequence approved by the Owner and Architect.

G. The General Construction Contractor shall be the coordinating contractor among the prime contractors for the project. All other Prime Contractors shall cooperate and coordinate their work with the General Construction Contractor.

H. Work not properly coordinated with the General Construction Contractor and within the design intent shall be reinstalled by the respective prime contractor including all associated work at no additional cost to the Owner.

J. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

- **OWNER OCCUPANCY**

A. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
2. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections, training and tests shall have been successfully completed. Upon occupancy the Owner will provide operation and maintenance of mechanical and electrical systems in occupied portions of the building.
4. Upon occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

• **USE OF PREMISES**

A. General: Each Contractor shall have full use of premises for construction operations, including use of Project site, during construction period as per the phasing plan. Each Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
2. Burial of Waste Materials is not permitted.
3. Reference Phasing Plan and Notes.
4. Owner Occupancy: Allow for Owner occupancy of site.
5. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Site Contractor shall be responsible for site access control, coordination and cleaning of site and public roads.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
6. Comply with the requirements of municipal agencies having authority and project NPD ES permit requirements. Each Contractor shall be required to be named as a co-permittee on the Owner's Applica-

tion.

B. Emergency Egress: Contractor shall maintain required emergency egress exists and access corridors from all occupied spaces in the existing building throughout the construction period.

- **WORK RESTRICTIONS**

A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated. All work required in existing occupied building must be coordinated and approved with the owner.

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

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permission.
3. Electrical Tie-in's must occur on weekends or in the evening.

C. Nonsmoking Building: Smoking is not permitted within the construction area or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.

- **SPECIFICATION FORMATS AND CONVENTIONS**

A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI's "MasterFormat" numbering system.

1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

- a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied

where a colon(:) is used within a sentence or phrase.

- **MISCELLANEOUS PROVISIONS**

A. Existing Utilities: The Contractor shall call 800-242-1776 "One Call System" as indicated prior to performing any excavation work.

1. Locate existing underground utilities in areas of excavation work prior to beginning excavation operations. Visibly mark or stake existing utilities for the duration of construction and renovations. If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations.
2. Should uncharted, or incorrectly charted, piping, or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
3. Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Owner and then only after acceptable temporary utility services have been provided.
4. Provide minimum 48-hour notice to Owner and receive written notice to proceed before interrupting any utility.

B. Prevailing Wage Rate Act 422: This regulation and the general Pennsylvania prevailing minimum wage rates (Act 442 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.

C. Pennsylvania Statutes and Regulations Act 247: Each Contractor shall comply with the requirements set forth in the "Pennsylvania Statutes and Regulations Act 247, Notice to Bidders- Recent Anti-Pollution Legislation". The Contractor shall agree to comply with the provisions of this Act as amended and that it is made part of the Contract Documents.

D. Compliance with Pennsylvania Acts 287 and 222: Contractors shall call 800-248-1786 (One Call System) to verify the exact location of underground facilities within not less than three (3) nor more than ten (10) working days prior to beginning any excavation or demolition work as required by General Assembly of the Commonwealth of Pennsylvania Act 172 (HB 1735).

1. The General Prime Contractor shall perform periodic inspections of the building progression to ensure compliance with the "Building Energy Conservation Act", Act 222 and agrees to sign the inspection section of the "Certificate of Design" form and the "Final Certification of Compliance" form, as required by Act 222.

E. Soil Erosion Control: Comply with the requirements of the Pennsylvania Department of Environmental Resources' "Soil Erosion and Sedimentation Control Manual" (Latest Edition). Secure forms and permits as required.

F. Right to Know Act: All Contractors shall comply with and require their sub-contractors and suppliers etc., to comply with the requirements of the Pennsylvania Act 194 "Right to Know Act".

G. Pennsylvania Human Relations Act 222: 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. Your attention is directed to the language of the Commonwealth's non-discrimination clause in 16 PA. Code 49.101.

H. Discrimination Prohibited: Each contract entered into by a government agency for the construction, alteration or repair of any public building or public work shall contain the following provisions:

1. According to 62 Pa. C.S.A. § 3701, the contractor agrees that:
 - a. In the hiring of employees for the performance of work under the contract or any subcontract, no contractor, subcontractor or any person acting on behalf of the contractor or subcontractor shall be reason of gender, race, creed, or color discriminate against an citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates.
 - b. 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 the contract on account of gender, race, creed, or color.
 - c. The contract may be canceled or terminated by the government agency, and all money due or to become due under the contract may be forfeited for a violation of the terms or conditions of that portion of the contract.

I. Standard of Quality: The various materials and products specified in the 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 describe the minimum standard. When proprietary names are used, they shall be followed by the words "or alternatives of the quality necessary to meet the specifications". 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.

J. Provision for the use of Steel and Steel Products made in the United States: In accordance with Act 3 of the 1976 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 as defined therein shall be used or supplied in the performance of the contract or any subcontracts there under.

1. In accordance with Act 161 of 1982, cast iron products shall also be included and produced in the United States. Act 141 of 1984 further defines "steel products" to include machinery and equipment. The act also provides clarifications and penalties.

K. Workmen:

- I. Citizen Workmen: Only citizens of the United States of America shall be employed, in any capacity in the performance of any work under the Contract; provided, however, that apprentices to a trade or pro-

fession who maybe under twenty-one (21) years of age shall not be subject to the foregoing restriction.

2. Competent Workmen: 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.

L. Asbestos: Whether indicated or not, all products on this project shall be asbestos-free. If any suspected asbestos-containing material are installed, the Owner has the right to have the material in question tested and if proven to contain asbestos, the Contractor shall remove all material in question and replace it with acceptable material at no additional cost to the Owner.

M. Protection of Employees, and Public: Take necessary precautions and provide adequate safeguards to employees and the public against damage or injury which may result from operations under Contract.

N. Project Sign: Required – 4'x8' full printed graphic on corrugated plastic to be installed by the contractor at entry to project location/address.

O. Schedule of Values and Cost Breakdowns: Within 15 days after award of contract, each prime Contractor shall provide a breakdown of the contract sum in sufficient detail to facilitate continued evaluation of payment requests. Break down principal sub-contract amounts into several line items. The Architect reserves the right to required additional further breakdowns upon notification at no additional cost to the Owner.

P. Surveys: The General Construction Contractor shall retain a competent registered engineer to lay out building on site, establish grade lines and levels for his own work and that of all trades, do other usual engineering work required. Any discrepancies between established lines, existing conditions and drawings shall be immediately reported to Architect for correction and adjustment Engineer shall establish a permanent benchmark in the field, as well as other suitable reference points for use of those concerned in erection and checking off lines and levels. The engineer shall profile rock before and after excavation.

Q. Use of Tobacco Products: smoking and other use of tobacco is prohibited in buildings.

R. Safety: Contractor is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work.

1. Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to all employees on the Work and all other persons who may be affected thereby.
2. Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations, codes and standards bearing on the safety of persons or property or their protection from damage, injury or loss, including without limitation, compliance with the requirements of the Occupational Safety and Health Act (OSHA) as amended from time to time. Nothing in this agreement or any other company directive or document relieves the Contractor from fully understanding and complying with the foregoing. Contractor shall develop and implement safety program responsive to the standards of OSHA, communicate such safety program to its employees, and Contractor will strictly enforce the safety rules under such safety program.
3. Barricades and Guard Lights - Provide and maintain barricades, railings, and guard lights at obstruc-

tions, trenches, excavations, newly laid concrete, etc., wherever necessary to safeguard public and in accordance with applicable codes and ordinances.

S. Americans with Disabilities ACT (ADA): Whether indicated or not, the Contractor must comply with Americans with Disabilities Act Guidelines (ADAG) and ANSI 117.1-1986, including but not limited to mounting heights of all equipment, fixtures, accessories, clearances, hardware, railings, signage, etc.

T. Sales and Use Taxes: The Owner is **not** exempt from the Pennsylvania State Sales Tax. Contractors shall pay any and all applicable taxes in accordance with the Pennsylvania State Sales Tax.

U. Taxes: Contractor shall pay when due, all taxes or assessments applicable to the Contractor. The Contractor shall comply with the provisions of the applicable statutes and the regulations of the applicable taxation authority. Any taxes levied upon this contract, the transaction, or the equipment, goods or services delivered pursuant hereto shall be the responsibility of the Contractor. The Contractor will be required to accept liability for payment of all payroll taxes or deductions required by local and federal law, including, but not limited to old age pension, social security, or annuities.

1. See Division 01 "Payment Procedures" for requirements to be included in the Schedule of Values regarding taxes.

V. Protection Requirements:

1. Bracing, Shoring, and Sheeting: Provide shoring, bracing, and sheeting required to safely execute work under contract and remove it after it has served its purpose.
2. Loss by Theft, or other Causes: Contractor shall protect against loss of material, work, or equipment by theft, vandalism or other causes and take such precautions as he sees fit to protect himself against loss therefrom. To safeguard building and contents, stored materials, and equipment may necessitate watchman's service and Contractor shall bear the cost for such service.
3. Weather Protection: Provide adequate protection of work and materials against damage by elements, rain, snow, wind, storms, frost, or heat. At end of day's work, protect new work liable to damage with temporary covering.
4. Fire Protection: Take reasonable precaution to guard against damage by fire and provide suitable fire protection equipment as deemed necessary. Do not build fire on premises.
5. Site Protection: Protect roads, curbs, sidewalks, and landscape work from damage, providing guards and covering, whether on site, on adjacent properties, or on public streets. Repair or replace damaged work at Contractor's expense.
6. Adjoining Property: Take adequate precautions and provide safeguards to protect adjoining property, buildings, fences etc., against damage from blasting, excavating, moving equipment or other operations under this control.
7. All Contractors are responsible for protecting their own work, as well as protecting the work installed by other contractors from damage due to each contractor's performance of their work.

PART 2- PRODUCTS (Not Used)

PART 3 – EXECUTION

END OF SECTION 01.1000

SECTION 01.1250 - SUMMARY OF MULTIPLE CONTRACTS

PART I-GENERAL

1.1 SUMMARY

- A. This Section includes a summary of each contract, including responsibilities for coordination.
- B. Specific requirements of each contract are also indicated in individual Specification Sections and on Drawings.
- C. Related Sections include the following:
 - 1. Division 1 Section "Summary" for the Work covered by Contract Documents and for work sequence.
 - 2. Division 1 Section "Project Management and Coordination" for general coordination requirements.
 - 3. Division 1 Section "Temporary Facilities and Controls" for requirements for temporary facilities and controls.

1.2 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.
- B. Coordinate: The term "coordinate" means "to cooperate with related trades to furnish and install all connections between the trades in correct sequence, size, and location to create a complete system ready for intended use."
- C. Verify: The term "verify" means "to measure, investigate, review, test, check the accuracy or correctness of and prove by demonstration, evidence, or testimony the location, size, dimension and condition of an item."
- D. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations."
- E. Install: The term "install" is used to describe operations at the project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, performing, coordinating with other trades, protecting, cleaning, and similar activities."
- F. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

1.3 COORDINATION

- A. Project Coordinator shall be responsible for coordination among the Site Construction Contract, General Construction Contract, Plumbing Contract (Including Fire Protection if required by the contract documents), Mechanical/HVAC Contract, & Electrical Contract.
 - 1. General Construction Contractor (GC) shall act as and assume responsibilities of Project Coordinator or Lead Contractor which are designated throughout the Contract Documents.
- B. Mechanical, Plumbing/Fire Protection & Electrical Coordinator, who shall be subordinate to Project Coordinator, shall be responsible for coordination between the Plumbing Contract, Mechanical Contract and Electrical Contract.
 - 1. The HVAC (Mechanical) Contractor shall be the primary M/E/P coordinator and responsible for the preparation of coordination drawings between mechanical plumbing and electrical trades. The Plumbing and Electrical Contractors shall provide such information to fully coordinate their work with that of the other primes, in the format requested by the HVAC Contractor. All Prime Contractors shall cooperate and be responsible for preparation and compliance with coordination drawings.
- C. GC shall coordinate all work in accordance with project phasing requirements and scheduled activities of all contractors. GC shall perform cutting and patching of all roofing materials including metal deck. Any structural reinforcement required is by the General Contractor.
- D. The MC, PC, and EC shall be responsible for providing and maintaining water-tight conditions for all roof penetrations and openings that are part of their scope.

1.4 PROJECT COORDINATOR

- A. Project Coordinator: Full-time Project Coordinator shall be experienced in administration and supervision of building construction, including mechanical and electrical work.
 - 1. Coordination activities of Project Coordinator include, but are not limited to, the following:
 - a. Provide overall coordination of the Work and phasing.
 - b. Coordinate shared access to work spaces.
 - c. Coordinate product selections for compatibility.
 - d. Provide overall coordination of temporary facilities and controls.
 - e. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
 - f. Coordinate construction and operations of the Work with work performed by each contract.
 - g. Maintain Web-Based Project management system, with access for Prime contractors, Owner representatives, and design Team, including Architect and Engineers, in accordance with Section 01.3100 Project Management and Coordination.
 - h. Coordination Drawings:
 - 1) Provide drawings and information and cooperate with other Contractors during preparation of Coordination Drawings.

- 2) Oversee and review preparation of Coordination Drawings to ensure contract requirements are met and properly sequenced.
 - 3) Implement the requirements of the Coordination Drawings.
- i. Coordinate sequencing and scheduling of the Work. Include the following:
- 1) Initial Coordination Meeting: At earliest possible date, arrange and conduct a meeting with separate contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.
 - 2) Prepare a combined Contractor's Construction Schedule for entire Project. Base schedule on Preliminary Milestone Construction Schedule included in bid documents. Secure time commitments for performing critical construction activities from separate contractors. Show activities of each contract on a separate sheet. Prepare a simplified summary sheet indicating combined construction activities of contracts. Prepare recovery schedules as needed.
 - 3) Distribute copies of schedules to Construction Manager, Architect, Owner, and separate contractors.
- j. Provide quality-assurance and quality-control services specified in Division 1 Section "Quality Requirements."
- k. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
- l. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
- m. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.
- n. Provide field surveys of in-progress construction and site work.
- o. Provide progress cleaning of common areas and coordinate progress cleaning of areas or pieces of equipment where more than one contractor has worked.
- p. Provide final cleaning of areas of work.
- q. Coordinate cutting and patching.
- r. Coordinate protection of the Work.
- s. Coordinate firestopping.
- t. Coordinate preparation of Project Record Documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
- u. Print and submit Record Transparencies if installations by more than one contractor are indicated on the same Contract Drawing or Shop Drawing.
- v. Collect Record Specification Sections from other contractors, collate Sections into numeric order, and submit complete set to Architect.
- w. Coordinate preparation of operation and maintenance manuals if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
- x. Before the concrete floor slab is poured, create a rough-in drawing indicating locations of underslab and in-wall conduits and utilities related to Work by Owner's Vendors. Intent: Vendors' Work requires coordination with Prime Contractors' Work.
- y. Coordinate work of all Owner vendors.

- B. Mechanical, Plumbing, and Electrical Coordinators: Full-time HVAC, Plumbing, and Electrical Coordinators shall be experienced in coordination of M/E/P construction, including but not limited to the following:
1. Schedule and sequence of Mechanical, Plumbing, Electrical, and general construction activities.
 2. Coordinate sharing access to work spaces by mechanical, plumbing, and electrical contractors.
 3. Coordinate integration of mechanical, plumbing, and electrical work into limited spaces.
 4. Coordinate protection of mechanical, plumbing, and electrical contractors' work.
 5. Coordinate cutting and patching for mechanical, plumbing, and electrical work.
 6. Prepare mechanical, plumbing, and electrical Coordination Drawings. Drawings shall coordinate and include but not limited to the following components:
 - a. Structural System limits.
 - b. Ceiling heights.
 - c. Electrical systems.
 - d. Fire protection systems
 - e. Mechanical piping & ductwork.
 - f. Storm and sanitary piping.
 - g. Data and telecommunications.
 7. Coordinate tests and inspections for mechanical and electrical work.
 8. Coordinate mechanical and electrical temporary services and facilities.
 9. Coordinate with all utility companies with bringing all utilities into the site (i.e. electric, cable, water, sewer, etc).
- C. General Parameters for Mechanical, Electrical, Plumbing Coordination Drawings.
1. HVAC contractor is responsible for integrating coordination drawings.
 2. Coordination drawings must be prepared electronically and in ACAD format.
 3. Comply with the requirements for coordination drawings as specified in the Division 01 Section "Project Management and Coordination."
 4. HVAC contractor shall within 20 days of a fully executed contract distribute layout drawings in CAD format to all contractors. Layout drawings shall include but not be limited to the following:
 - a. Columns and beams
 - b. Ceiling heights
 - c. Ceiling dimensional layouts per the reflected ceiling plans
 - d. Ceiling grid
 - e. Coordination drawings of ceiling cavities and mechanical rooms demonstrating the spatial relationship and necessary clearances within the available space above ceilings and within rooms for HVAC, plumbing, fire protection, electrical and structural systems
 - f. Wall to wall dimensions
 - g. Partition layouts
 - h. Windows, doors, and other openings
 - i. Heights from ceiling to structural components
 - j. Dimensions from column centerlines
 - k. Other appropriate building features

5. Upon receipt of layout CAD files, each contractor shall proceed immediately and independently to indicate their work as overlays on the CAD files. This work shall be done within the next 4 days unless otherwise agreed upon by the Construction Manager.
 6. The drawing layout prepared by each contractor shall be transmitted to HVAC contractor and other contractors for comment and adjustments.
 7. Coordination meetings will be held, and all contractors will be required to attend and cooperate. Changes shall be made as requested by HVAC contractor. This process shall take up to 30 days.
 8. Contractors shall also prepare additional CAD drawings as necessary to adequately and completely show the intended routing and layout of their work. Additional drawings may include riser diagrams, flow sheets, elevations, details, sections, isometric layouts, etc. as determined by the HVAC contractor and the Architect.
 9. The Prime Contractor responsible for Work in each of the following categories shall prepare or arrange for preparation of Coordination Drawings for the following systems:
 - a. HVAC systems
 - b. Plumbing systems
 - c. Fire protection systems including sprinklers if required by the contract documents.
 - d. Electrical systems
 - e. Openings and sleeves in structural slabs
 - f. Ceiling systems
- D. Include on Coordination Drawings the information listed below for each of the following categories of Work:
1. Mechanical Systems:
 - a. Sizes and bottom/headroom elevations of new electric unit heaters.
 - b. Weights of each unit and the proposed attachment structure.
 - c. Locations of major components, including dampers, valves, diffusers, cleanouts, and electrical distribution equipment
 2. Electrical Systems:
 - a. Horizontal and vertical runs of conduit 1-1/4 inch diameter and larger
 - b. Light fixture locations and mounting type.
 - c. Smoke and Carbon Monoxide detector locations.
 - d. Panel boards, switch boards, switch gear, transformers, busways, generator, and motor control center
 - e. Exit signs, strobe/horn, and emergency battery pack locations
 - f. Pull box dimensioned from column centerlines
 3. Fire Protection System if required by the contract documents.:
 - a. Sizes and centerline elevations of sprinkler piping
 - b. Sprinkler head locations with elevations referenced to ceiling heights
 - c. Locations of major valves
 4. Structural Work:
 - a. Openings and sleeve locations required in slabs, walls, beams, and other structural elements, including required openings not indicated on Contract Documents.

- b. Slab edge locations
- 5. Roof Structure Reflected Ceiling:
 - a. Locations and attachment methods of mechanical, fire protection and electrical items, including grilles, registers, diffusers, light fixtures, smoke detectors, sprinkler heads, exit signs, speakers, and other items.
 - b. Conform to locations indicated on Contract Drawings to the minimum extent possible.
 - c. Indicate positions relative to acoustical ceiling grid where applicable.
- E. HVAC contractor shall put together all information for final preparation and submission of integrated coordination drawings. This shall be done within 60 days of a fully executed contract for all areas of the building unless otherwise approved by Owner.
- F. Any Contractor not complying with any of the coordination requirements including the timelines will be assessed \$600.00 for each day that Contractor is not in compliance.

1.5 CONTRACTS, GENERAL

- A. Extent of Contract: Unless the Contract Documents contain a more specific description of the Work, names, and terminology on Drawings and in Specification Sections determine which contract includes a specific element of Project.
 - 1. Unless otherwise indicated, the Work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
 - 2. Local custom and trade-union jurisdictional settlements do not control the scope of the Work of each contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, affected contractors shall negotiate a reasonable settlement to avoid Or minimize interruption and delays.
 - 3. Trenches for the Work of each contract within the building to five (5) feet outside of the building shall be provided by each contract for its own Work.
 - 4. Trenches for the site utility Work outside the building to within five (5) feet of the building shall be provided by the Site Construction Contract.
 - 5. Trenches are not to be left open unless they are enclosed by fencing or barriers.
 - 6. The ends of the utilities or conduits are to be stubbed up.
 - 7. Cutting and patching for the Work of each contract shall be provided by each contract for its own Work unless the work involves a structural element in which case the work shall be completed by the General Contractor.
 - 8. Firestopping for the Work of each contract shall be provided by each contract for its own Work.
 - 9. Within five (5) working days after preliminary horizontal bar-chart-type construction schedule submittal has been received from Project Coordinator, submit a matching preliminary horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction.
 - 10. BUILDING PAD – Building pad shall be priced and procured as follows:
 - a. Sitework Package – SC shall provide building pad at Finish Floor minus concrete slab and stone thickness. GC will then sign-off and approve of the Pad.
 - b. GC will install footings and foundations. GC is responsible for back fill, compaction, and restoration of the pad. MEP primes will then sign-off and approve the pad.

- c. MEP trades will install underground rough-ins. MEP trades are responsible for back fill, compaction, and restoration of the pad. GC will then sign-off and approve the pad.
- d. The MEP trades are responsible for any concrete required for their trenches, drains, or conduits.
- e. Each trade (GC or MEP) is responsible for dewatering for its own construction activities.
- f. GC will stone the building pad and prepare, as required, for pours.
- g. GC to coordinate the installation of tie-rod or hair pins (if required) with the MEP trades.
- 11. Noise Control: Each contract shall be responsible to control noise that may be disruptive the operation of the adjacent existing Building, and the adjacent residential properties. Coordinate with Owner in advance regarding timing of noisy work.
 - a. When using gasoline powered equipment inside an occupied building, this shall be limited to times when the building is not occupied. Alternatively use electric or compressed air powered equipment.
- 12. Dust and Smoke Control: Each contract shall be responsible to control dust and smoke production and distribution in occupied areas of the building that require work. Do not do work that produces dust, smoke or other air borne particulates without adequate control facilities. Protections include but are not limited to:
 - a. HEPA vacuums to collect dust.
 - b. Temporary dust enclosure.
 - c. Negatively pressurize the space and exhaust to a location not disruptive to the Owner.
 - d. Employ water spray for concrete saws.
 - e. When using gasoline powered equipment inside an occupied building, this shall be limited to times when the building is not occupied. Alternatively use electric or compressed air powered equipment.
 - f. Comply with all current OSHA requirements for smoke and dust control.
- 13. Protection of Ceilings: Each contract shall be responsible to remove, carefully store and reinstall ceilings in rooms with above ceiling work for that contract where the ceiling in that room is indicated as existing to remain or has been newly installed. Where ceilings are damaged, the cost of replacement or repairs will be divided equally between prime contractors with above ceiling work in that room.
 - a. Where a Prime Contractor requires extended access above a newly installed ceiling, that Contractor shall coordinate with the GC to not install the permanent ceiling panels, and that contractor shall provide and install temporary ceiling panels in place of the permanent ceiling panels. Temporary ceiling panels can be salvaged from demolition work (if applicable), or reused from some other source, or may be the lowest cost panel available to that Contractor. When access is no longer required, that Contractor shall remove the temporary panels and coordinate the permanent installation of ceiling tiles with the GC.
- 14. Concealed sealants for the Work of each contract shall be provided by each contract for its own Work. Comply with Division 07 requirements for sealants.
- 15. Access doors and frames or panels for permanent access to work of each contract shall be provided by each contract for its own work.
 - a. GC to install all access panels.
- B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the Work.

- C. Temporary Facilities and Controls: See specific responsibilities for temporary facilities and controls indicated in Division 01 Section "Temporary Facilities and Controls," and noted on the Contract Documents.
 - 1. Each Prime Contractor shall provide their own heating and related fuel to their respective temporary field offices.
 - 2. Electrical Contractor to install and connect temporary power and meter to all Prime Contractors' and Construction Manager field offices. Utility charges to be paid for my Owner.
- D. The Contractor responsible for installation of the systems and equipment is responsible for commissioning each system. The minimum commissioning requirements in accordance with Division 01 and other specific project requirements, including coordination and verification, shall be the responsibility of the Contractor.

1.6 MULTIPLE PRIME COORDINATION CLARIFICATIONS

- A. To the extent that the work of all of the contracts represents a complete and integrated whole, each Prime Contractor shall become thoroughly familiar with all of the construction documents. Work of a particular contract shall be substantially located on the documents referenced below, but such references do not relieve each Contractor for responsibility to provide work in compliance with requirements on all of the documents as follows:
 - 1. Information contained on any construction document shall be enforceable on each Contractor as indicated on drawings, by reference to contractor designations (GC, SC, PC, HC, and EC).
 - 2. Dimensional information on the Architectural, MEP and Site drawings that relates to the work of a particular contract shall be the responsibility of that Contractor to install the item where located.
 - a. In the absence of specific dimensional information on the Architectural, MEP and Site plans for exposed items provided by the HVAC, Plumbing, and Electrical Contracts, consult Architect, Engineer, or Construction Manager for decisional requirements before installing exposed item.
 - 3. In case of conflicts, assignment of responsibilities shall be at the sole interpretation of the Architect, Engineer, or Construction Manager.
- B. General Contractor shall furnish and install lintels and structural supports required for openings and recesses in new construction to allow the passage of the Work of his Contract and the Work of the Plumbing/Fire Protection, HVAC, and Electrical Prime Contracts.
- C. General Contractor shall also provide chases and openings 12" x 12" or larger for equipment in new construction, including all roof areas, as directed, supervised, located, marked, and configured within the project structure, by the Plumbing; HVAC; and Electrical Prime Contractors' personnel on-site. All these openings shall be sealed by the prime contractor requiring the opening. All sleeves, conduits and sealing of the same shall be furnished and installed by the prime contractor that requires the access for installation of systems. Roofing Subcontractor to the GC shall perform cutting and patching of roof materials as directed by the other Prime Contractors for the implementation of their work.
- D. The Prime Contractors shall be responsible to seal all roof openings. GC and Roofing Subcontractor are responsible up to curb flashings. The HVAC Contractor shall layout all openings and curbs and shall provide all roof curbs to GC for installation. GC shall provide all blocking and accessories to install curb. Roofing Contractor will provide all permanent roofing and flashing to the curbs. HVAC Contractor is

responsible to seal any temporary openings and install new equipment keeping the opening watertight at all times.

- E. During placement of concrete slabs, each Prime Contractor that has rough-in requirements in the slab shall provide on-site personnel while slabs are being poured to direct, supervise, locate, mark, and configure rough-in requirements. Sleeves required for floor, wall and roof penetrations shall be furnished and installed by the Prime Contractor(s) that require the sleeves. The Prime Contractor using the sleeves is responsible for installing sealant, fire-safing, and/or escutcheons necessary for a finished installation.
- F. Prime Contractors who fail to properly coordinate their work in new construction work and whose work requires an opening, or recess, in completed construction shall be responsible to provide that alteration; to furnish and install lintels and structural supports required; and to patch the construction to match the completed unaltered.
- G. General Contractor shall furnish and install louvers. General Contractor shall also apply sealant around wall mounted outside air intake louvers.
- H. Site Contractor shall provide sanitary, water and storm sewer system from a point five feet outside the perimeter of the building, unless noted otherwise. Plumbing Contractor shall provide sanitary and storm system within building and underground to a point five feet outside the building perimeter, unless noted otherwise and shall make final connection to storm and sanitary system.
 - 1. General Contractor shall provide exterior stormwater conveyance including exterior gutters, downspouts, and leaders to below grade.
 - 2. Site Contractor will Provide Below grade drainage as shown on the Civil/PCSM plans.
 - 3. For interior roof drainage, General Contractor to furnish and install roof drains and emergency roof drains (Roof drains specified in Architectural specifications and indicated on Architectural drawings). Plumbing Contractor to connect to roof drain outlet and extend piping from roof drains to 5'-0" beyond building with final connection to site storm piping. Plumbing Contractor to connect to emergency roof drains and extend piping to termination location as indicated on plumbing plans with all required termination fittings.
- I. Plumbing Contractor shall make final connections and shall provide valved connections to make-up water feeders to loop water system and dual temperature system, as indicated.
- J. Plumbing Contractor shall make final connections on propane-fired equipment as indicated including emergency generator.
- K. Interior concrete bases and pads required for plumbing, fire suppression, heating, ventilation, and air conditioning, and electrical equipment shall be provided by the contractor installing the equipment unless noted otherwise.
- L. General Contractor shall provide all exterior concrete pads and bases with exception of exterior light bases, generator pad and transformer pad. Exterior light pole bases, generator pads, and transformer pads are by the Electrical Contractor.
- M. HVAC and Plumbing Contractors shall provide control interlock wiring for their associated system equipment.

- N. Electrical Contractor shall provide disconnect switches for HVAC and Plumbing system equipment except where such items are factory installed as an integral part of the equipment.
- O. Electrical Contractor shall provide manual motor starters, or magnetic motor starters, for HVAC and Plumbing equipment except where such equipment is provided with factory installed starters as an integral part of the equipment or equipment control panel. Variable frequency drives shall be an integral part of HVAC equipment and HVAC variable speed pumping package.
- P. Electrical Contractor shall provide fuses for disconnects and disconnect/starter switches. HVAC and Plumbing Contractors shall furnish the Electrical Contractor with required motor data to properly size and select fuses and overload protection in accord with the National Electrical Code requirements. HVAC and Plumbing Contractors shall furnish to the Electrical Contractor the equipment manufacturers' circuit protection data.
- Q. Plumbing, HVAC, and Electrical Contractors shall provide miscellaneous steel members for support of hanging systems installed under their contract and shall reinforce joists for non-panel point concentrated loads. When run parallel to joists, hanging systems shall be supported from steel installed perpendicular to joists and spanning a minimum of three (3) joists. All miscellaneous steel required shall be provided by contractor installing the systems under their contract; do not use joists for support. Supporting from metal roof deck and deck systems is prohibited.
- R. General Contractor shall provide door louvers.
- S. HVAC Contractor shall set controls, panelboards, and appurtenances installed in pipe lines and ductwork and shall provide control wiring.
- T. Electrical Contractor shall provide devices, wiring within casework and final connections for educational casework as provided for in the contract documents.
- U. Plumbing Contractor to provide all fixtures, traps, etc. to provide all installation and final connections of sinks, faucets, and fittings. Coordinate this work with the General Contractor as provided in the contract documents.
- V. Plumbing, HVAC, and Electrical Prime Contracts shall furnish any access panels which are required for access to their work. Coordinate opening requirements with the General Contractor for installation by GC.
- W. HVAC Contractor to furnish and install all exterior vents.
- X. The disconnection and/or reconnection of existing equipment shall be by the Plumbing/ HVAC/ Electrical Contractor as applicable.
- Y. All roofing work will be performed by GC:
 - 1. GC shall coordinate all work in accordance with project phasing requirements and scheduled activities of all other contractors. GC shall perform cutting and patching of all roofing materials including metal deck. Any structural reinforcement required is by the General Contractor.
 - 2. The GC shall be responsible to maintain water-tight conditions between the roof and curbs, pipes, and conduits for both permanent and temporary flashing. The MC, PC, and EC shall be responsible for providing temporary enclosures that are watertight for all roof penetrations and openings that are part of their scope in order to maintain water-tight conditions beyond the

roofer's flashings. GC is responsible to install all HVAC curbs and required leveling blocking. HVAC to provide curbs and layout and shall deliver curbs on roof adjacent to permanent location of curb. GC responsible for up to curb flashing.

3. General Contractor shall also provide chases and openings 12" x 12" or larger for equipment in new construction, including all roof areas, as directed, supervised, located, marked, and configured within the project structure, by the Plumbing; HVAC; and Electrical Prime Contractors' personnel on-site. All these openings shall be sealed by the prime contractor requiring the opening. All sleeves, conduits and sealing of the same shall be furnished and installed by the prime contractor that requires the access for installation of systems. Roofing Contractor (General Contractor) shall perform cutting and patching of roof materials as directed by the other Prime Contractors for the implementation of their work. The Prime Contractors shall be responsible to seal all roof openings. GC is responsible up to curb flashings.

1.7 MULTIPLE PRIME COORDINATION FOR ELECTRONIC/ELECTRIC TEMPERATURE CONTROLS, DIVISION 23

- A. The HVAC Contractor is defined herein to include the work of the Mechanical Contractor, H.C., M.C., ATC Sub-Contractor, and/or BAS Contractor.
- B. The HVAC Contractor shall provide wiring, fiber, and data cable between all Ethernet Network Controllers Standalone Digital Control Units, workstations, software, sensors, transducers, relays, valves, dampers, damper operators, control panels, and other accessory equipment, along with a complete system of electrical interlocking wiring to fill the intent of the specification and provide for a complete and operable system as specified in Division 23.
- C. The Electrical Contractor shall provide electric power wiring to new plumbing and HVAC equipment. HVAC Contractor shall provide electric power wiring and control wiring for ATC equipment and devices.
- D. The Electrical Contractor shall furnish and install duct smoke detectors at locations designated by the Mechanical Contractor and wire to the ATC/BAS system. The Electrical Contractor shall connect each smoke detector to the building fire alarm system. ATC/BAS Sub-Contractor shall provide interconnecting wiring to de-energize the fan.
- E. The Electrical Contractor shall provide the kW/KWH transducer specified at each secondary metering location as identified. The HVAC contractor shall provide control wiring to the points specified.
- F. The Electrical Contractor shall provide auxiliary contacts on generator/transfer switch as required in the points list in Division 23. The HVAC Contractor shall provide control wiring to the points.
- G. The HVAC Contractor shall provide all interlock wiring specific to equipment.

1.8 SITE CONSTRUCTION CONTRACT

- A. Work in the Sitework Construction Contract includes all labor, materials equipment, and services necessary for the civil construction. Work shall be defined in the Civil (C-Series) and Highway Occupancy Permit (HOP) drawings, as described in the General Conditions and Specifications Divisions 01, 31, 32, and 33. Work of this contract includes, but is not limited to, the following:
 1. Site Preparation, including clearing, earthwork, demolition, and grading.

2. Import and/or export of fill material.
 - a. This includes loading, hauling, installation, import, export, and disposal of fill material located on the farm property across Moyer Road at the Evans Site.
 - b. This includes import of fill material to the Evans Site, and export of fill material from the Gilbertsville Site. Site Contractor is responsible for temporarily stockpiling approximately 3,600cy of material and the appropriate E&S measures at the Gilbertsville site as shown on the CVE Civil Plans. In late fall or winter, as directed by the Construction Manager, the Site Contractor is responsible for loading, hauling and dumping all material to 370 Evans Road, Pottstown, PA.
3. Site improvements including, but not limited to, roadways, parking lots, pedestrian paving where not assigned to the GC, site development furnishings, equipment, and landscaping. All curbs, islands, access roads, retaining walls, fencing, operable gates, rain gardens, utility installation up to within 5 feet of the building.
4. Establishment of building pad to be provided at Finish Floor minus concrete slab and stone thickness.
5. Sanitary, storm, and water piping to within 5 feet outside the building footprint, including excavation, patching if required, and backfill.
6. Aqua America will install the proposed copper water supply pipe, located between the connection with the main and the proposed water meter, along with making the connection at the main. The Site Contractor shall perform all other water related utility work in support of Aqua America's work including but not limited to: roadway and non-roadway excavation/repair, meter pit/backflow preventer installation, and all on site water components. Site Contractor will be responsible for all saw cutting, trench excavation, backfilling of trench, and restore either in grass or paved areas from the main connection to the meter pit. The Site Contractor is responsible for full installation methods of the water from the meter pit to 5 feet from the building.
7. As part of the Base Bid condition, all utilities shall be run to the location of the proposed Public Works Building (Alternate Bid condition), and stubbed five (5) feet outside the building. EXCEPTION: Propane.
8. Relocation / installation of hydrants, and all utility poles
9. Construction of all new concrete sidewalks, unless noted otherwise as GC work. Including ramps and detectable warnings.
10. Landscaping, seeding, topsoil, and mulching.
11. Subbase stone and asphalt paving
12. Line striping
13. Motor operated gates and all associated work (foundations, pads, etc.)
 - a. Coordinate ground loop installation with owner's access control vendor.
 - b. Coordinate electrical requirements and conduits for Operator with EC and / or Owner's Vendor.

14. Guard rail scope
15. Post-mounted signage
16. All work required for the HOP plans
17. Bollards.
18. Trash enclosure.
19. Testing required for all water and sewer lines. Including videoing for all storm sewer, sanitary and water piping.
20. Concrete pads for sitework.
21. Fencing for Police Department.
22. Trenching for Site Contractor elements and/or equipment required for Base Bid and Bid Alternate conditions.

- B. Temporary facilities and controls in the Site Work Construction Contract include, but are not limited to, the following:
1. Temporary facilities and controls that are not otherwise specifically assigned to the General, Plumbing, Fire Protection, HVAC, and Electrical Construction Contract.
 2. Sediment and erosion control including assumption of Erosion and Sedimentation Pollution Control permit (NPDES) and responsibilities thereof. All work on the E&S Plans and PCSM plans.
 3. Stormwater control.
 4. Temporary roads and paved areas.
 5. Dewatering facilities and drains.
 6. Excavation support and protection as required by OSHA, unless required solely for the Work of another contract.
 7. General hoisting facilities for materials and personnel, up to 2 tons.
 8. Barricades, warning signs, and lights.
 9. Site Security enclosure and lockup.
 10. Tree protection fence.
 11. Environmental protection.

1.9 GENERAL CONSTRUCTION CONTRACT

- A. The Work under the General Construction Contract includes demolition, architectural, and structural construction and other activities traditionally recognized as general construction required by any of the Contract Documents, including but not limited to, the architectural, civil, structural, specification Divisions 00 through 13, 31, 32, and 33, except when specifically assigned to another Contract for construction. Work in the General Construction Contract includes, but is not limited to, the following:
1. Construction waste management for the entire project. Coordination and preparation of final CWM report with information provided by all Prime Contractors.
 2. Selective Demolition as indicated on the drawings and for all items not shown on drawings to remain or be incorporated into new work.
 3. New concrete slab on grade, including earthwork and moisture protection.
 4. Steel support, including roof construction and related duct work.
 5. Roofing, including coverings, flashings, openings for mechanical systems and related duct work.
 6. Interior construction, including partitions, doors and frames, toilet accessories, and flooring/ceiling finishes.

7. Fire suppression specialties and fire-rated framing and glass.
 8. Furnishings, including Cabinetry, Casework, Millwork, and window treatments shown on drawings.
 9. All Exterior walls, insulation, sheathing, siding, finishes, windows, landscape walls, monument signs, and flagpoles.
 10. Openings, including Windows, Doors, and Door Hardware.
 11. Starting, commissioning, adjusting, and training of all General Construction systems and equipment.
 12. Provide all aluminum windows, storefronts, entrance doors, glass, and glazing.
 13. Installation of Owner-furnished items as noted on the plans and specifications.
 14. Provide all blocking necessary to install Owner-furnished items.
 15. As part of the Base Bid condition, all utilities shall be run to the location of the proposed Public Works Building (Alternate Bid condition), and stubbed five (5) feet outside the building. EXCEPTION: Propane.
 16. Trenching for General Contractor elements and/or equipment required for Base Bid and Bid Alternate conditions.
- B. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:
1. Temporary facilities and controls that are not otherwise specifically assigned to the Site Contract, Plumbing Contract, Fire Protection Contract, HVAC Contract, and Electrical Contract.
 2. Unpiped temporary toilet fixtures, wash facilities, and drinking water facilities, including disposable supplies.
 3. Temporary enclosure for building exterior.
 4. Temporary heat for interior and exterior construction as required
 5. Temporary roads and paved areas related to building construction.
 6. Dewatering facilities and drains for work not related to site work.
 7. Excavation support and protection, unless required solely for the Work of another contract.
 8. General hoisting facilities for materials and personnel, up to 2 tons.
 9. Project identification sign and temporary signs.
 10. General waste disposal facilities for general cleaning of building and site.
 11. Pest control.
 12. Temporary stairs.
 13. Temporary fire-protection equipment.
 14. Barricades and warning signs.
 15. Final cleaning of facilities. Perform this for both entire buildings at the end of each phase.
 16. Site Construction Sign.
 17. Floor protection throughout facility for new finishes.
 18. Furnishings for temporary job office located in the existing house that will act as Construction Manager's office. Provide plan tables, working tables, medical cabinet, fire extinguisher, and required job signage in compliance with all local, state, and federal job postings.

1.10 PLUMBING CONTRACT

- A. The Work under the Plumbing Construction Contract includes all construction and other activities traditionally recognized as plumbing work required by any of the Contract Documents including, but not limited to, the plumbing drawings, specification Divisions 00, 01, 02, 03, 07, 11, 13, 21, 22 and 31 except when specifically assigned to another contract for construction. Work in the Plumbing Contract includes, but is not limited to, the following:

1. Selective Demolition of Plumbing Systems
 2. Temporary water line or hose for construction activity.
 3. Firestopping of Plumbing Work.
 4. Plumbing connections to toilet fixtures
 5. Toilet fixtures, cleanouts, ball valves, sanitary/vent piping for toilet fixtures
 6. Sanitary waste.
 7. Gas piping and pipe mount, regulators related to propane service.
 8. Stormwater drainage.
 9. Plumbing connections to equipment furnished under other contracts.
 10. Preparation of plumbing drawings and assisting HVAC contractor in preparation of coordination drawings.
 11. Coordinate work with all contractors including, but not limited to electrical, general and HVAC contractors. Coordinate and confirm locations and rough-in for all work with all contractors. Make location adjustments as required.
 12. Roof drain piping installation
 13. Firestopping of Plumbing Contractor Work.
 14. As part of the Base Bid condition, all utilities shall be run to the location of the proposed Public Works Building (Alternate Bid condition), and stubbed five (5) feet outside the building. EXCEPTION: Propane.
 15. Starting, adjusting, commissioning, and training for all plumbing equipment.
 16. Provide temporary water service for construction per Temporary Facilities.
 17. Maintain operation of existing systems at occupied areas.
 18. Trenching for Plumbing Contractor elements and/or equipment required for Base Bid and Bid Alternate conditions.
- B. Temporary facilities and controls in the Plumbing Contract include, but are not limited to, the following:
1. Piped water service.
 2. Plumbing connections to existing systems and temporary facilities and controls furnished by the General Construction Contract, HVAC Contract, Electrical Contract, Fire Protection Contract, and the Sitework Contract, and the Owner's Vendors' equipment.

1.11 HVAC CONTRACT

- A. The Work under the HVAC Construction Contract includes all construction and other activities traditionally recognized as mechanical work required by any of the Contract Documents including, but not limited to, the HVAC drawings, specification Divisions 00, 01, 02, 03, 07, 11, 13, 23 and 31 except when specifically assigned to another contract for construction. Work in the HVAC Contract includes, but is not limited to, the following:
1. All HVAC systems.
 2. All exhaust fan and associated duct work
 3. HVAC distribution including piping and ductwork.
 4. Ductwork accessories including grilles, registers, and diffusers.
 5. Terminal and packaged units.
 6. Energy recovery and other specialty HVAC equipment.
 7. HVAC instrumentation and temperature control system.
 8. Air handling units and packaged air handling units.
 9. All insulation for HVAC systems.

10. Starting, commissioning, adjusting, and training for all HVAC contract equipment.
 11. Testing, adjusting, and balancing of systems, and coordination with Owner's agents.
 12. Mechanical connections to equipment furnished under other contracts.
 13. All roof curbs and accessories for HVAC equipment.
 14. Preparation of ductwork and HVAC/Electrical coordination drawings.
 15. Firestopping of HVAC Work.
 16. As part of the Base Bid condition, all utilities shall be run to the location of the proposed Public Works Building (Alternate Bid condition), and stubbed five (5) feet outside the building.
EXCEPTION: Propane.
 17. Temporary Heat
- B. Temporary facilities and controls in the HVAC Contract include, but are not limited to, the following:
1. HVAC connections to existing systems and temporary facilities and controls furnished by the General Construction Contract, Plumbing Contract, Electrical Contract, and the Sitework Contract, and the Owner's Vendors' equipment.

1.12 ELECTRICAL CONTRACT

- A. The Work under the Electrical Construction Contract includes all construction and other activities traditionally recognized as electrical work required by any of the Contract Documents including, but not limited to, the electrical drawings, specification Divisions 00, 01, 02, 03, 07, 08, 11, 13, 26, 27, 28 and 31 except when specifically assigned to another contract for construction. Work in the Electrical Contract includes, but is not limited to, the following:
1. Site lighting, excavation, and electrical distribution.
 2. Selective demolition of electrical systems.
 3. Met-Ed's guy poles are intended to remain.
 4. Electrical service upgrade to 200 Amps is in progress at the existing house to remain (Gilbertsville Site). EC to run electric from the house panel to the site.
 5. Electrical distribution from panel PR to fixtures, receptacles, and exhaust fan.
 6. Owner shall provide generator and ATS for Base Bid and Bid Alternate conditions. EC shall pick up, deliver to site, and install.
 7. Interior/Exterior Lighting
 8. Flagpole lighting and related conduit, boxes, wiring, rough-ins, connections, and controls.
 9. Wiring and electrical connections to all motor-operated access gates for Base Bid and Alternate Bid Conditions. Coordinate with Site Contract and Owner's Vendor(s).
 10. Connect existing well pump circuit to new electric panels.
 11. Wiring and electrical connections to site utility elements, including but not limited to: grinder pump, in-line and end-line sanitary sewer flushing stat.
 12. Conduit for cable/internet provider to the new Administration and Police Building and to the Public Works Building.
 13. The transformer, new utility pole, and primary feed will be completed by Met-Ed.
 14. Transformer: One (1) transformer will be set by Met-Ed for all buildings/uses. The installation of all conduits, transformer vaults, and secondary wires are the responsibility of the EC.
 15. Luminaires, lighting controls and all accessories.
 16. Fire detection and notification systems.
 17. Communication and systems.
 18. Card access system, including door access and security systems as defined in DIV 08.
 19. Intrusion detection system.

20. Emergency lighting systems & Exit signs.
 21. Electrical grounding.
 22. Electrical connections to equipment furnished under other contracts.
 23. Electrical rough-in including conduit, pull wire in conduit, and back boxes.
 24. Conduit, Raceways, and cable trays as specified and required for all work.
 25. Floor and wall boxes for all work.
 26. Data and telephone wiring. Data jacks and related data equipment.
 27. Furnish and install racks, patch panels, cross connect and punch blocks.
 28. Furnish and install wall jacks and face plates.
 29. Structural supports, hangers, sleeves and inserts for new electrical systems and components.
 30. New sleeves through existing exterior wall for all electrical components.
 31. Coordinate work with all contractors, including, but not limited to plumbing, general and HVAC contractors. Coordinate and confirm locations and rough-in for all work with all contractors. Make location adjustments as required.
 32. Provide equipment and all necessary wiring for interfacing of the following systems:
 - a. HVAC equipment
 - b. Temperature control
 - c. Plumbing equipment
 33. Install owner-furnished screens, mounting brackets, and hardware.
 34. Starting, commissioning, adjusting, and training of all electrical systems and equipment.
 35. Testing, adjusting, and balancing electrical systems and equipment.
 36. New Smoke and Carbon Monoxide Detectors tied into existing fire alarm system.
 37. Firestopping of Electrical Work.
 38. As part of the Base Bid condition, all utilities shall be run to the location of the proposed Public Works Building (Alternate Bid condition), and stubbed five (5) feet outside the building. EXCEPTION: Propane.
 39. The EC is responsible for maintaining power to all areas of the occupied building for all phases of the project. See DIV 01 for "Temporary Facilities and Controls" for temporary power needs.
 40. Trenching for Electrical Contractor elements and/or equipment required for Base Bid and Bid Alternate conditions.
- B. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:
1. Electric power service and distribution.
 2. Lighting, including site lighting.
 3. Electrical connections to existing systems and temporary facilities and controls furnished by the General Construction Contract, Plumbing Contract, HVAC Contract, and the Sitework Contract, and the Owner's Vendors' equipment.
 4. Power to Job Trailers of other Prime Contractors and existing house that will act as Construction Manager's office. This house is intended to remain as a separate service, at least through construction.
- C. Coordination between EC and Owner's Vendor includes the following:

1. Owner's Vendor is providing and installing equipment including hardware and devices indicated in Vendor's informational drawings. Refer to Owner's Vendor's drawings for additional information in Information Available To Bidders.
2. The EC shall provide and install all boxes, conduits, wiring, and cabling to Vendor's devices. Vendor to install and terminate their devices. Owner's Vendor to provide pedestal at driveway.
3. Items required to install the equipment that were not included in Vendor's drawings must be provided and installed by the EC in order to make the system operational. This applies to the Integrated Security, Access Control/CCTV System, and phones.
4. For systems furnished by Owner's Vendor:
 - a. Owner's Vendor shall complete cabling terminations at the controller/head end locations, and shall program and test the system.
 - b. Owner's Vendor shall perform commissioning on the systems that are furnished by Owner's Vendor.

PART 2- PRODUCTS (Not Used)

PART 3- EXECUTION (Not Used)

END OF SECTION 01.1250

SECTION 01.1400 – WORK RESTRICTIONS

PART 1 – GENERAL

1.1 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. The work hours must comply with local township ordinance.
 - 2. Limits: Confine constructions operations to the legal property boundaries.
 - 3. Owner Occupancy: Owner will vacate the building and site throughout the construction period. All contractors must comply with phasing and milestone dates listed in the contract documents.
 - 4. Perform the Work so as not to interfere with public access and adjacent public streets and residences. At all times, provide measures to ensure safe access by the Owner and the public.
 - 5. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's representatives, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Conduct construction operations in accordance with acceptable procedure to minimize noise and dust. Fugitive dust from roadways and the site is to be reduced by means of water sprayed from a water truck or tank supplied and operated continuously by the General Contractor during construction operations.
 - b. General Contractor shall be responsible for site access control, coordination and cleaning of site and public roads. The General-Contractor will arrange for roadway cleaning and mechanical sweeping on a daily basis as needed and directed by the Construction Manager.
 - c. Use roadways, driveways and entrances designated for construction only.
 - 6. Comply with the requirements of municipal agencies having authority and project NPDES permit requirements where applicable.
 - 7. General contractor shall provide protection, barriers, signage and traffic controls necessary to maintain public streets and sidewalk access and to facilitate access to temporary and permanently occupied areas during construction.
 - 8. All contractors shall provide protection, barriers and signage for any specific scope of work under their contract that affects the public access on roads and sidewalks.

9. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - a. Notify Owner not less than two days in advance of proposed utility interruptions.
 - b. Do not proceed with utility interruptions without Owner's written permission.
10. Comply with Township tobacco use policies. In any case, smokeless tobacco use and smoking in any form is prohibited on the site and within any part of structure at any phase of construction. Smoking will be permitted only in areas designated by Owner.
11. Contractor will comply with all Township regulations and policies while on Township property, as well as any special regulations adopted by the Owner relating to this Project..
12. Inappropriate language, dress or conduct will not be tolerated on the construction site. Violations of the above shall be grounds for dismissal.
13. IDENTIFICATION: The Owner reserves the right to require all construction employees to be visually identified by the use of badges. In the event this security measure is implemented, the Owner will issue badges to all authorized employees in conjunction with the Prime Contractors and record their issuance with names, addresses, etc. Termination of employment of the construction employees will require the respective badges to be returned to the Owner for record keeping purposes. All employees must wear the badge on the job site. Employees without badges will not be permitted on the premises.
14. Contractor, subcontractors and their agents and employees, shall not be permitted in existing school facilities except in areas then currently being renovated, absent receiving prior approval from Owner or Owner's Representative.
15. Any persons violating any of the above requirements shall be subject to immediate and permanent exclusion from the School District site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 COMPLY WITH THIS SECTION SO EXISTING OPERATIONS ARE NOT AFFECTED

A. The existing property is to be maintained in continuous operation during the entire construction period. Work is to be scheduled and conducted by each contractor such that work will not impede vehicular traffic and activities, create potential hazards to existing facilities or persons at the site or cause dust, odor, noise or other nuisances. In performing the Work all contractors shall plan their work to meet operating requirements and schedule any additional requirements outlined in this section to avoid interruption to any Township operations.

B. Each Contractor has the option of providing additional temporary facilities that can eliminate a constraint in the Phasing and Milestones provided it is done without cost to the Owner and provided it does not require any other prime contractor to perform additional work and provided that all of the requirements of these specifications are met. At all times the Work must be completed in a sequence and fashion approved by the Owner/Construction Manager. In the event of any delay in the Work that will impact the relocation or moving of furnishings or equipment, the Owner/Construction Manager has the discretion to adjust its move or relocation milestone schedule by up to 30 days. Such action by the Owner/Construction Manager shall be issued in writing to the contractor not less than 30 days prior to the anticipated milestone date.

C. Each contractor shall have on hand and in close proximity to the work, all tools, equipment and materials both temporary and permanent, to complete each work category without interruption. Prefabrication of assemblies shall be completed to the greatest degree possible prior to any building system shutdown to minimize the duration of the shutdown.

D. Electrical service and data service and telephone service to all operating areas is to remain in service during the construction period. Temporary shut-downs to tie in new services and systems are to be completed outside of normal operating hours and at times that are convenient to the Owner. The Electrical Contractor shall lock out and tag circuit breakers and switches and shall check cables and wires to ensure they are deenergized to ground potential before work begins.

E. Unless otherwise specified the contents of all tanks, pipes and other vessels to be demolished are to be disposed of by the contractor requiring the draining. No uncontrolled spillage will be permitted.

F. All cutting and demolition work that creates noise levels in excess of 50dBA for adjacent occupied areas shall be performed after school hours, holidays or on weekends unless prior permission from the Owner has been obtained.

G. All utility interruptions shall be scheduled and shall be performed after school hours, holidays or weekends unless prior permission from the Owner has been obtained.

END OF SECTION 01.1400

SECTION 01.1500 – FIELD ENGINEERING

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes general procedural requirements governing execution of field engineering services including, but not limited to, the following:
 - 1. Construction layout
 - 2. Field surveying and recording of all underground utilities and stormwater.
- B. All work specified in this Section shall be provided and paid for by the General Contractor

1.2 SUBMITTALS

- A. Qualification Data: For land surveyor to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Certified As-Built Underground Utilities Surveys: Submit two (2) copies signed, sealed and dated by land surveyor. Certified surveys shall be provided on reproducible mylars and on electronic files in format as directed by the Architect.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally licensed qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

3. Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to Owner and Architect by owners of such Underground Facilities or others, and Owner, Construction Manager and Architect do not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the General Conditions. Contractor shall verify the location of all underground utilities prior to any excavation.
4. General Contractor is responsible, on behalf of the project facility owner, for providing the physical markings of all existing utilities including those on site as indicated on the drawings or that may be identified in the field. The locations shown on the drawings are approximate. The Contractor must include in his proposal the cost for hand-dug test holes, or other means, to ascertain the precise position of such underground facilities on the site owned by the Owner. This verification should be performed for any utilities to be relocated, removed, modified or that may otherwise interfere with planned work. The utilities in the public right of way will be identified and marked by the appropriate facility owner as per the requirements of the PA One Call Act as amended. Physical layout is to be performed in full compliance with the PA One Call PA Act 287 of 1974 as amended by Act 18 of 1996.

3.2 CONSTRUCTION LAYOUT

- A. General: The General Contractor will be responsible to layout building foundations and column grid locations.

3.3 FIELD SURVEYING

- A. Identification: Owner will identify existing benchmark and control point.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference point before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- C. Layout for General Contractor: General Contractor shall be responsible for layout and location of all work under the General Contract.
- D. Layout for other Trades: General Contractor shall locate on-site control points, elevation control and reference points for use by all trades (M/E/P and Site) to perform their own layout and work.

3.4 UNDERGROUND UTILITIES

- A. The Land Surveyor shall record the location, inverts, etc. of all the following underground utilities, beyond the exterior face of the building:
 1. Storm Water: Include all inverts, top of rim or grate, pipe sizes and locations.
 2. Storm Water Structures: Include elevations of all top of grate, bottom of structures, and pipe sizes
 3. Underground Drainage System: Include inverts, top of rim or grate and locations.
 4. Underground electric, telephone, cable television, manholes, power and control lines, spare conduits for future uses, computer conduits, etc. Provide locations and elevations.
 5. Sanitary Sewer System Including All Structures: Provide locations, inverts, top of rim or grate, and bottom of structures.

6. Water distribution system, electric, telephone and cable television lines shall be located at 50 foot intervals and at changes in horizontal and vertical direction of line. Around turns, where the radius is less than 100 feet, the interval shall be 25 feet.
 7. Natural gas or propane systems distribution piping, piping sizes, locations and elevations.
- B. The Land Surveyor shall coordinate obtaining all the above improvements information with the Contractor making the installation since trenches for utilities will be backfilled as soon as the lines are installed.
- C. Contractor shall prepare all drawings necessary to record the specified information. Drawings shall indicate all property lines, new and existing structures, etc.

3.5 GENERAL CONTRACTOR

- A. General Contractor shall provide engineering and layout for his work. In addition, the General Contractor shall provide and maintain throughout the project, building corners and column centerlines. General Contractor shall provide floor control lines for each floor consisting of at least two perpendicular column lines per area and finish floor elevations. Each Prime Contractor shall be responsible for other survey, engineering, layout, etc., required in connection with their own work. The Prime Contractor, at his own expense, is to provide stakes, templates, and labor required in laying out his work as is responsible for proper execution of the Work in accord with lines, levels, elevations and dimensions indicated in the Contract Documents.
- B. Contractor shall be responsible for checking the position of the reference points comprising the primary control prior to starting site work and shall notify Engineer of discrepancies found between actual and record measurements.
- C. The existing reference points shall not be disturbed without prior written approval from the Engineer. If existing reference points are disturbed during construction, new reference points shall be installed by the Contractor to control the work. The locations of the new reference points will be approved by the Engineer prior to setting the new reference points.
- D. Protection of monuments and stakes is the responsibility of Contractor. Replacement of damaged control and reference points shall be at Contractor's expense.
- E. From the primary reference control provided by Owner, establish secondary control points necessary for the layout and construction of the Work. Secondary control shall consist of sufficient permanent points to establish the lines and grades for the various Work either directly or by offset. Layout lines for use in construction of the Work shall be established by the Contractor and taken directly from either the primary or secondary controls.
- F. Secondary control shall be tied to and closed upon the primary control.
- G. **ACCURACY OF LAND BASED SURVEYS**
1. Points for cross sections shall be located to the nearest 0.05 foot horizontally and vertically.

2. Vertical elevation surveys shall close within 0.05 foot times the square root of the length of the circuit in miles.
 3. All grade stakes shall be set to 0.02 foot.
 4. Alignment of tangents and curves shall be within 0.01 foot.
 5. Points for structures shall be set to the nearest 0.02 foot, except where operational function of special features require closer tolerances.
 6. Survey movement monuments shall be surveyed within an accuracy of 0.91 foot vertical and 0.01 foot horizontal.
 7. Tolerances for all other Work shall be as shown or specified in the Contract Documents.
 8. Survey instruments shall be accurate and shall be subject to inspection by Engineer for proper operation.
 9. Electronic distance measuring (EDM) instruments used by Contractor on the Site shall be checked for calibration a minimum of once per month on an established base line approved by Engineer. Calibration results shall be kept in a logbook, available for Engineer's review, showing the date and distances measured on the base line. An EDM shall not be used if it does not meet the minimum advertised accuracy published by the manufacturer of the EDM.
 10. Defective instruments shall be promptly replaced, repaired, or adjusted to operate within the tolerances of the instrument manufacturer.
 11. All work not performed with the methods and equipment as submitted by Contractor and accepted by Engineer shall be removed and replaced by Contractor at its own expense.
- 3.6 Site Contractor shall submit an electronic copy of a registered site drawing prepared by a registered surveyor within 14 days of Substantial Completion and certificate signed by the Land Surveyor that elevations and locations of Work are in conformance with the Contract Documents.
- A. Property lines with metes and bounds.
 - B. North arrow.
 - C. Dimensions (overall) of structures.
 - D. Location of structures in relation to property lines.
 - E. Location and dimension of setbacks, easements and rights-of-way.
 - F. Location of structures, wooded areas, water courses, rock outcrops, culverts and other significant physical features on the site.
 - G. Name of Owners of the adjoining properties. Provide information on adjoining properties as required by the Township/Borough Ordinance, including, but not limited to lot number, plat name, recording reference number, etc.
 - H. Utility data as follows:
 - a. Location of utility lines and structures, including, but not limited to electricity, gas, water, sanitary, telephone, cable and fiber cable.
 - b. Location and identification of storm sanitary structures, including, but not limited to manholes, cleanouts, inlets, catch basins, yard drains and end walls. Include elevations at top and invert of each structure.
 - c. Location, size, type and invert of pipes flowing into and from each storm and sanitary structure.
 - I. Locations and trunk diameters of existing trees and tree masses located within the project site.
 - J. Topographic contours with two-foot intervals for overall site plan.
 - K. Driveway and parking areas, sidewalks, and stairs, ball fields (indicating limits of infields), running tracks, bleachers and other physical features (e.g. lighting standards, fencing, benches, paving types (concrete, bituminous, brick) curb types (concrete bituminous), etc.).
 - L. Elevations at perimeter of buildings, sidewalks, areaways, curbs finish floor elevations at each entry of each building and other site elements. Provide sufficient spot elevations to indicate

- drainage patterns and vertical elevation changes (e.g. stairs, loading docks, etc.). Provide floor elevations inside building.
- M. Names, dimensions and rights-of-way of adjoining streets at intersecting driveways and streets along and within 100 feet of the property frontage.
 - N. Utilize the same benchmark as the original survey. A copy of which was provided for your information at the onset of the project.
 - O. Final drawing survey to be submitted electronically on a compact disk, either DXF or AutoCAD DWG format, or via e-mail.

END OF SECTION 01.1500

SECTION 01.2200 – UNIT PRICES

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices if stated on the bid form.
- B. Related Sections include the following:
 - 1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.2 DEFINITIONS

- A. Unit price is stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, taxes overhead, and profit.
- B. Measurement and Payment: The Architect will verify units of measurement with the Contractor. Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Specification Sections should be referenced for requirements and materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- A. REFER TO THOSE INDICATED ON THE INDIVIDUAL BID FORMS.

END OF SECTION 01.2200

SECTION 01.2300 – ALTERNATES:

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing Alternates.

1.3 DEFINITIONS

- A. Definition: An alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

- 1. The cost or credit for each alternate is the net addition to or deduction from the Base Bid to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.
- B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other Work of this Contract including project schedule, milestones and phases required for completion of the work.
- D. Schedule: Specification sections and drawings contain requirements for materials and systems necessary to achieve the Work described under each alternate. Contract Proposal Form will identify each Alternate in a format such as: 1, 2, etc.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

As outlined on bid forms; 004116 GC BID FORM, 004117 MC BID FORM, 004118 PC BID FORM, 004119 EC BID FORM, and 004120 SC BID FORM.

END OF SECTION 01.2300

SECTION 01.2600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 01 Section "Unit Prices" for administrative requirements for using unit prices.
 - 2. Division 01 Section "Quantity Allowances" for administrative requirements for using material allowance unit prices.
 - 3. Division 01 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. The Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect and Construction Manager will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Architect and Construction Manager are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and

activity relationship. Use available total float before requesting an extension of the Contract Time.

- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to the Construction Manager and Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 5. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
- C. Proposal Request Form: For Change Order proposals use AIA forms provided by the Architect.

1.5 ALLOWANCES

- A. Owner Contingency Allowances are to be used only as directed by the CM/Owner
- B. Material Allowance Adjustment: If a material allowance is included in the work, prior to performing any work included in a material allowance, the Contractor shall review the work with the Construction Manager and Architect. **No work shall be performed without prior approval of the Construction Manager and Architect.** The Construction Manager will verify and adjust material allowance amounts, based on the quantity of work required and by final measurement of work-in-place. The Contractor shall provide the Construction Manager with the following information:
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 - 3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, the Architect and Construction Manager will issue a Change Order for signatures of Owner, Contractor, Construction Manager, and Architect.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: The Architect may issue a Construction Change Directive on AIA Document. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.2600

And

SECTION 01.2900 – PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Division 01 Section "Unit Prices" for administrative requirements governing use of unit prices.
 - 2. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.2 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with Continuation Sheets.
 - b. Submittals Schedule.
 - 2. Submit the Schedule of Values to the Construction Manager and Architect at earliest possible date but no later than 14 days after the notice to proceed.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Prepare Schedule of Values to clearly separate the work for each phase of the project scheduled to be occupied by the Owner.
 - 3. Schedule of Values will be entered into Procore by Construction Manager when Contracts are fully executed..
 - 4. Prepare Schedule of Values in compliance with costs loaded CPM schedule unless otherwise approved by Construction Manager.
 - 5. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

-
- a. Related Specification Section or Division and in compliance with cost loaded schedule.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - i. Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 6. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
 7. Round amounts to nearest whole dollar total shall equal the Contract Sum.
 8. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.
 9. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 10. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 11. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
 - b. Mechanical, Plumbing and Electrical Contractors shall include a separate Schedule of Values line item for coordination drawings.
 12. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and Construction Manager and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for submission of each application for payment is the 25th day of each month. The period covered by each Application for Payment ends on the FINAL day of each month. Pencil copies of applications for payment shall be submitted in advance for review by Architect, Construction Manager, and Owner no later than the 25th day of each month. All payment applications must comply with project scheduling requirements. These dates are subject to change for the duration of the Project by the Owner prior to the first application for payment.

- C. Payment Application Forms: Use AIA Documents as form for Applications for Payment. Utilize AIA G702-1992.
- D. All Applications for Payment will be submitted through and Approved Through Procore.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect or Construction Manager will return incomplete applications without action.
 - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- F. Initial Application for Payment: The following minimum administrative actions and submittals must precede the submittal of first Application for Payment:
 - 1. List of subcontractors.
 - 2. Schedule of Values.
 - 3. Contractor's CPM Construction Schedule (preliminary if not final).
 - 4. Products list.
 - 5. Schedule of unit prices.
 - 6. Submittals Schedule (preliminary if not final).
 - 7. List of Contractor's staff assignments.
 - 8. List of Contractor's principal consultants.
 - 9. Copies of building permits.
 - 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 11. Initial progress report.
 - 12. Report of pre-construction conferences.
 - 13. Initial settlement survey and damage report if required.
 - 14. Construction Waste Management Plan.
 - 15. Construction IAQ Management Plan (preliminary if not final).

The first payment application will not be processed unless these, and any other items required by the Architect and Construction Manager, are processed.
- G. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 - 3. Provide any other documentation including warranties, manuals or other information requested by Architect.
- H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. AIA Document G707A, "Consent of Surety to Reduction in or Partial Release of Retainage."
8. Evidence that claims have been settled.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.2900

SECTION 01.3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Project meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 7300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 2. Division 01 Section 01 7700 "Closeout Procedures" for coordinating Contract closeout.
 - 3. Division 01 Section 01 7419 "Construction Waste Management" for additional information and procedures.

1.2 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule

2. Preparation of the Schedule of Values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-installation conferences.
 7. Construction Waste Management Plan activities.
 8. Construction IAQ Management Plan activities.
 9. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.
- E. Each Contractor shall:
1. Perform his Work as mandated by the project schedule to maintain the required sequence and the overall progress of the project.
 2. Coordinate Work of his own employees and subcontractors.
 3. Expedite his Work to assure compliance with approved schedules.
 4. Coordinate his Work with that of other Prime Contractors and work by the Owner.
- F. Modifications to the Work made necessary by a Contractor's failure to properly coordinate the Work, shall be made by that Contractor, at no cost to the Owner.
- G. Remove Work installed out of sequence that prohibits a separate Prime Contractor the ability to install Work that is dependent on their prior installation of materials or equipment. No additional compensation or time extension will be considered for the uncovering or removal of the out of sequence Work.
- H. Each Prime Contractor shall coordinate space requirements and installation of mechanical and electrical work indicated diagrammatically on the Contract Drawings. Follow routing shown for pipes, ducts and conduit as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance and for repairs.
- H. 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 and to meet governing code requirements.
- I. Each Prime Contractor shall make adequate provisions to accommodate items scheduled for later installation.
- J. Each Prime Contractor shall, in finished areas except as otherwise indicated, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements provided by other Contractors.
- K. Each Prime Contractor shall verify utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

- L. Each Prime Contractor shall coordinate Testing and Inspection Services:
 - 1. Verify required laboratory personnel are present.
 - 2. Verify tests are made in accord with specified standards.
 - 3. Review test reports for compliance with specified standards.
 - 4. Recommend and administer any required retesting.
 - 5. Submit copies to the Owner, Construction Manager and Architect/Engineer.
 - 6. Coordinate with Owner's Geotechnical Engineer through the Construction Manager for compaction and moisture content testing. Notify Geotechnical Engineer in advance of need for testing in accord with Project Construction Schedule.
 - 7. Coordinate with Owner's Inspection Agency for concrete, masonry and steel testing and inspection through the Construction Manager. Notify agency in advance when testing and inspection is required.
- M. Each Prime Contractor shall coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion, and for portions of Work designated for Owner's partial occupancy.
- N. Each Prime Contractor shall, after Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accord with Contract Documents, to minimize disruption of Owner's activities.
- O. In addition to its project superintendent, each Prime Contractor shall provide other administrative and supervisory personnel required for proper performance of Work, including special personnel required for coordination of operations with other Prime Contractors.

1.3 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
 - 1. Indicate relationship of components shown on separate Shop Drawings.
 - 2. Indicate required installation sequences.
 - 3. Refer to Division 23 Section "Basic Mechanical Materials and Methods" and Division 26 Section "Basic Electrical Materials and Methods" for specific Coordination Drawing requirements for mechanical and electrical installations.
- B. Staff Names: Within 7 days of receiving a letter of Intent to Award , submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.
 - 2. Provide list to Owner and Architect.

1.4 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1. Include special personnel required for coordination of operations with other contractors.

1.5 PROJECT MEETINGS

- A. Preconstruction Conference: Construction Manager will schedule a preconstruction conference before starting construction, at a time convenient to Owner, Architect and Contractor(s) within 15 days after execution of the Agreement. The conference will be held at Project site or another convenient location. The meeting will review responsibilities and personnel assignments and other pertinent issues to the project.

1. Attendees: Authorized representatives of Owner, Architect, Construction Manager and their consultants; Prime Contractor(s) and their superintendent; major subcontractors and other Owner pre-approved parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:

- a. Tentative construction schedule.
- b. Critical work sequencing.
- c. Designation of responsible personnel.
- d. Procedures for processing field decisions and Change Orders.
- e. Procedures for processing Applications for Payment.
- f. Distribution of the Contract Documents.
- g. Submittal procedures.
- h. Preparation of Record Documents.
- i. Use of the premises.
- j. Responsibility for temporary facilities and controls.
- k. Parking availability.
- l. Office, work, and storage areas.
- m. Equipment deliveries and priorities.
- n. First aid.
- o. Security.
- p. Progress cleaning.
- q. Working hours.
- r. Construction Waste Management Plan activities.
- s. Construction IAQ Management Plan activities.

- B. Pre-installation Conferences: Prime Contractors shall conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Construction Manager and Owner of

scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related Change Orders.
 - d. Purchases.
 - e. Deliveries.
 - f. Submittals.
 - g. Review of mockups.
 - h. Possible conflicts.
 - i. Compatibility problems.
 - j. Time schedules.
 - k. Weather limitations.
 - l. Manufacturer's written recommendations.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.
 - p. Temporary facilities and controls.
 - q. Space and access limitations.
 - r. Regulations of authorities having jurisdiction.
 - s. Testing and inspecting requirements.
 - t. Required performance results.
 - u. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements.
 4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- C. Progress Meetings: Attend progress meetings as scheduled or when notified. Meetings will be generally held every other week unless progress or significant issues arise in the progress or lack thereof of the work.
1. Attendees: In addition to representatives of Owner, Construction Manager and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be

expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

b. Review present and future needs of each entity present, including the following:

- 1) Interface requirements.
- 2) Sequence of operations.
- 3) Status of submittals.
- 4) Deliveries.
- 5) Off-site fabrication.
- 6) Access.
- 7) Site utilization.
- 8) Temporary facilities and controls.
- 9) Work hours.
- 10) Hazards and risks.
- 11) Review of open RFI's.
- 12) Progress cleaning.
- 13) Quality and work standards.
- 14) Change Orders.
- 15) Documentation of information for payment requests.
- 16) Construction Waste Management Plan activities.
- 17) Construction IAQ Management Plan activities.
- 18) Site security and safety issues.

3. Reporting: The Construction Manager will distribute minutes of the meeting to each party present and to parties who should have been present. Minutes will include a brief summary, in narrative form, of progress since the previous meeting and report.

a. The Contractor shall revise the Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting. Two week look ahead.

D. Weekly Superintendent Meetings: Attend weekly superintendent meetings scheduled and chaired by the General Contractor.

1. Attendees: In addition to representatives of the Owner, Construction Manager and Architect, each contractor and subcontractor responsible for work in the upcoming two weeks to be represented.

2. Agenda: Review the work planned in the next two weeks and other items that may affect work in the short term including:

- a. Deliveries
- b. Site traffic patterns
- c. Subcontractors working at the site
- d. Maintenance of erosion and sediment control features
- e. Site cleanliness
- f. Planned work hours
- g. Coordination items

3. At each coordination meeting, each Prime Contractor is to provide a written two-week look ahead schedule to the General Contractor, Construction Manager and Architect for review and comment.
4. The Construction Manager shall write meeting minutes for each coordination meeting and distribute them to each Prime Contractor and to the Architect for review within two days after the meeting.

1.6 WEB BASED PROJECT MANAGEMENT SYSTEM

- A. Prime Contractors shall use Construction Manager's Procore software to transmit documents, track, and otherwise manage this project. Use will be mandatory for the Prime Contractors to send, retrieve, and respond to data. There is no cost to Prime Contractors to use Construction Manager's Software.
- B. Use of this project management software will not change any contractual responsibilities of the construction team members.
- C. Related Sections include the following: Section 01.3300 SUBMITTAL PROCEDURES.
- D. The Construction manager shall provide technical assistance and training as required for new users.
- E. The Web-based project management system is a "secure, real-time, interactive, centralized database" specifically established and maintained for the management of this construction project. The product is designed to facilitate communication and improve the time management of its users by facilitating the sharing of information. Information will be available 24/7, from any computer meeting the specifications listed above. The information is fully protected, backed up daily and archived. The electronic platform allows information to be transmitted across the Internet reducing printing and postage costs and the time associated with such activities.
- F. The following shall be maintained and distributed via the Web-based project management software:
 1. Submittals – Including Shop drawings, product data, testing reports, certifications, installation instructions, all will be submitted and distributed by the system. The Architect will return all submissions through the system electronically. Contractor(s) may distribute submittals (after Architect's action) electronically, or elect to print paper copies for distribution, or both.
 2. Meeting Agenda and Minutes
 3. RFI (Request for Information)
 4. RFP (Request for Proposal)
 5. ASI (Architect's Supplemental Instructions)
 6. CCD (Construction Change Directives)
 7. Daily reports
 8. Project Record Documents
 9. Site Photos
 10. Change Orders
 11. Schedule of Values
 12. Payment Applications
 13. Schedules

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.3100

SECTION 01.3117 – COORDINATION DRAWINGS

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section and each Division 01 Section applies to all separate Prime Contracts.
- B. This Section includes requirements for preparation of Coordination Drawings for structural, mechanical, and electrical work.
- C. Related Documents and Sections: The following documents and Sections contain requirements that relate to this Section:
 - 1. Division 01 Section “Shop Drawings, Product Data, and Samples”.
 - 2. Division 01 Section “Coordination” and “Summary of Multiple Contracts” specified requirements for coordinating construction operations by the Prime Contractors.

1.2 DEFINITIONS

- A. Coordination Drawings: Scaled drawings and Building Information Modeling files (BIM) prepared by each Prime Contractor which superimpose work of several trades, intended for careful coordination of installation of products and materials provided by separate entities.
- B. Key Drawings: Two dimensional drawings of each floor or area of the Project indicating proposed subdivision into ductwork layout shop drawings.
- C. Layout Drawings: Two and three dimensional architectural and structural backgrounds to be used by all Prime Contractors for development of Coordination Drawings.
- D. Electronic Documents: Electronic Reproductions and Photocopy Reproductions of Contract Drawings will not be accepted for Shop Drawing and Product Submittals by contractors. Refer to procedures for obtaining contract drawings for background use only and BIM Model for coordination purposes only. The Construction Documents and BIM Model shall not be construed as dictating the ways and means of construction.

1.3 COORDINATION DIGITAL DATA FILES:

- A. Prepare coordination digital data files according to the following requirements:
 - 1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings (Revit 2022) operating in Microsoft Windows operating system.
 - 2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format and Navisworks File (NWC).
 - 3. Architect and their consultants will furnish Contractor one set of Revit 2022 building Information Modeling files (BIM) of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.

- b. Digital Data Software Program: Drawings are available in Revit 2022 digital data software working on the windows operating system. Sheet views will be deleted to protect Architect and consultants. Full model will be available for coordination.
 - c. Contractor shall execute a data licensing agreement in the form of Agreement included in this Project Manual.
- 4. BIM File Incorporation: Develop and incorporate coordination drawing information into Building Information Model established for Project.
 - a. Each of the Prime Contractors shall model their respective systems in the BIM Model that are part of their contract and provide updated files to the HVAC contractor.
 - b. The HVAC Contractor (Prime Coordinator) shall perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts with each Prime prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect and obtain approval of Architect.
 - c. HVAC contractor shall revise the BIM model as necessary to reflect the coordination changes. HVAC contractor shall pay for the cost of revisions to the BIM model. HVAC contractor shall include a minimum of 300 hours for specific changes to Architectural components of the BIM model provided by Architect and if required as a result of coordination. All modifications, enhancements, additions, and changes to structural, mechanical, electrical, plumbing, fire protection, or HVAC components shall be made by the respective Prime Contractors responsible for that system as part of their contract.

1.4 COORDINATION DRAWING PROCEDURES

- A. General: Approval of Shop Drawings assumes satisfactory incorporation of coordination information.
- B. Do not use Contract Drawings as Coordination Drawings.
- C. Initial Submittal: Key Drawings & BIM layout drawings, shall be submitted by HVAC Contractor within 60 calendar days of Contract Award
- D. Final Submittal: Submit final BIM layout drawings & Coordination Drawings 60 days after submission of Initial Submittal.
- E. Provide Coordination Drawing initial submittals as follows:
 - 1. Key Drawings: The HVAC Contractor shall prepare and submit Key Drawings consisting of scaled drawings in .pdf format of each floor or area of the Project indicating proposed subdivision into ductwork layout shop drawings, with applicable shop drawing numbers.
 - 2. Review: The HVAC contractor shall conduct a Coordination Planning Meeting with all contractors and the Architect to review the Key Drawings and determine adequacy of proposed layouts to cover the Project and the following:
 - a. Sequencing and scheduling of Coordination Drawing production in relation to the Construction Schedule.
 - b. Complex areas for which larger scale drawings and details will be required.
 - c. Coordination Drawing format, text, title blocks and Contractor coordination sign-off.
 - 3. Layout Drawings: Upon acceptance of Key Drawings, HVAC Contractor shall prepare common BIM layout drawings of all architectural and structural backgrounds to be used

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- by all Prime Contractors for development of Coordination Drawings. Include the following elements and information on Layout Drawings:
- a. Columns and beams.
 - b. Ceiling heights.
 - c. Ceiling dimensional layouts as shown on reflected ceiling plans.
 - d. Acoustical ceiling grid.
 - e. Wall-to-wall dimensions.
 - f. Partition layouts.
 - g. Windows, doors, and other openings.
 - h. Other major architectural and structural features shown on General Construction Drawings.
 - i. Indicate dimensions from column centerlines.
 - j. Include space in title block for Contractor sign-off and shop drawing control number
4. Drawing Format: Produce Layout Drawings in BIM format. The version of BIM software used to produce the layout drawings shall be at the discretion of the HVAC Contractor; however, any version used must be compatible with Revit 2022. The HVAC Contractor shall coordinate the modeling software he proposes to use with the other Prime Contractors. The HVAC Contractor shall distribute the layout drawings in BIM format, to the following for their use:
- a. Architect
 - b. General Contractor
 - c. HVAC Contractor
 - d. Plumbing Contractor/Fire Protection
 - e. Electrical Contractor
 - f. Subcontractors as deemed appropriate by the Architect
- F. Coordination Drawing Preparation: Upon receipt of BIM Layout files, each Prime Contractor shall proceed immediately and independently to indicate the work included in their Contract:
1. Circle, highlight, or otherwise clearly indicate deviations from Contract Documents and state reasons for deviation.
 2. BIM Standards: Comply with the following:
 - a. Indicate pipes, conduits, and pipes with diameter of less than 6 inches with single lines.
 - b. Indicate ducts and pipes with diameter of 6 inches and greater with double lines showing width to scale.
 - c. Indicate busways to scale.
 - d. Use competent BIM operator to develop Coordination Drawings in a clear, legible manner.
 - e. The Owner and Architect shall have sole judgment as to acceptability of Coordination Drawings and adherence to expected standards.
 3. Ductwork Drawings: Show all items included as part of ductwork system, including:
 - a. Ductwork with insulation.
 - b. Hangers.
 - c. Equipment.
 - d. Grilles, registers, and diffusers.
 - e. Filters.
 - f. Volume dampers.
 - g. Fire dampers.

- h. Automatic control dampers.
 - i. Duct smoke detectors.
 - j. Access doors and other access requirements for maintenance.
 - k. Location of ATC sensors and controllers
- 4. Piping Drawings: Show all items included in piping systems, including:
 - a. Piping runs with insulation.
 - b. Hangers.
 - c. Valves.
 - d. Coils.
 - e. Equipment.
 - f. Sensors.
 - g. Flow monitors.
 - h. Access door locations and other access requirements for maintenance.
- 5. Plumbing and Fire Suppression Drawings: Show all items included for plumbing and fire suppression systems, including:
 - a. All domestic water, fire suppression, rainwater, and sanitary piping including main and branch lines.
 - b. Standpipes.
 - c. Sprinkler heads.
 - d. Valves.
 - e. Fire hose cabinets.
 - f. Inspector test assemblies.
 - g. Drain outlets.
 - h. Access door locations and other access requirements for maintenance.
 - i. Flow and tamper valves.
- 6. Electrical Drawings: Show items included in lighting and electrical power systems, including:
 - a. Equipment.
 - b. Panels.
 - c. Boxes.
 - d. Conduit runs.
 - e. Light fixture locations and depths.
 - f. Devices.
 - g. Access door locations and other access requirements for maintenance.
 - h. Cable trays.
- 7. Structural Drawings – Show all foundation and structural systems, braces, hangars, and connections.
- 8. Other contractors required to participate in coordination drawing program shall indicate their work on the BIM Layout Drawings as directed.
- 9. Additional Drawings: Each contractor shall prepare additional BIM drawings as necessary to adequately and completely show the intended routing and layout of their work. Additional drawings may include riser diagrams, flow sheets, elevations, details, sections, isometric layouts, etc. as determined by the HVAC Contractor.
- 10. Scheduling: Time allotted for each contractor to develop their Coordination Drawings and schedule of coordination meeting will be determined by the HVAC Contractor during the initial coordination planning meeting.
 - a. Each Contractor's initial planning shall include preparing and coordinating not less than four (4) drawing areas per week or a greater amount if required. Project management time required to accomplish this schedule shall be included in Bid.

- b. Each Prime Contractor shall be responsible to provide sufficient staff at appropriate times to avoid delays in the coordination process.
 - c. Coordination Drawing preparation shall commence as soon as final BIM Layout Drawings are submitted.
 - 11. Interim Submissions: Coordination Drawings and Building Information Modeling files (BIM) shall be developed and submitted in the sequence directed, in sufficient time to avoid delay in the construction schedule. Partially completed Coordination Drawing submissions may be accepted in cases where complete data is not available, pending receipt of shop drawings. Leave sufficient space to incorporate missing information in subsequent submission; note such omissions and state reason for vacant area.
 - a. When final information is available, promptly insert in Coordination Drawings. Submit complete set of Coordination Drawings covering all area once final information incorporated.
- G. Coordination Process: HVAC contractor and other prime contractors shall devote whatever is necessary to fulfill the requirements and to keep the process on schedule. HVAC contractor shall revise the BIM model as necessary to reflect the coordination changes. HVAC contractors shall pay for the cost of revisions to the BIM model.
 - 1. Basis for Placement of Elements: Make every reasonable effort to retain the layouts, placements, and routings shown on the Contract Drawings. Deviations from Contract Drawings will be permitted only when no other resolution is deemed appropriate, and only upon written approval of the Architect.
 - 2. Coordination Drawing Development: As coordination Drawings are developed, each Prime Contractor shall check and adjust locations to avoid interferences. Highlight conflicts, particularly involving finish products, for discussion at coordination meeting. Minor variances from Contract Drawings in routing of ducts, pipes and conduits may be made to avoid conflicts when mutually agreed, provided these variances do not alter the intended function, or require an adjustment of the contract price.
 - a. Do not change sizes, adjust location of exposed items, or expose items not shown exposed on Contract Drawings without approval of the Architect.
 - b. Do not revise any wall or chase locations, ceiling heights, door swings or locations, windows or other openings, or other features affecting the function or aesthetic effect of the building.
 - c. Refer conflicts and interferences that cannot be satisfactorily resolved to the Architect for a determination through the use of an RFI.
 - d. Coordination drawings shall follow the construction phasing drawing sequence.
 - 3. Coordination Meetings: The HVAC Contractor will schedule coordination meetings every two weeks, or as required, to review each contractor's layout drawings. All Prime Contractors, major trade contractors and subcontractors, as required by the HVAC Contractor, shall be represented at the meetings to review and resolve conflicts and interferences.
 - 4. Coordination Sequence:
 - a. Structural detailer to complete structural model. Upon completion, in whole or by phase or area determined at the coordination meetings, this model shall be shared with the HVAC Contractor.
 - b. HVAC Contractor to model all HVAC systems. HVAC to perform clash detection between HVAC, structural items and ceiling systems. All clashes shall be resolved prior to proceeding.
 - c. HVAC to provide all other prime contractors the coordinated Structural and HVAC models.

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- d. All prime contractors to complete their 3D Models for their systems. Upon completion give model to HVAC contractor.
 - e. HVAC contractor to combine all models and run clash detection to report all interferences. HVAC contractor to host coordination meetings as required to resolve all interferences with respective contractors.
 5. Coordination Responsibility: All Prime Contractors have collective responsibility to fulfill coordination requirements. The HVAC Contractor may require attendance at meetings on a daily or weekly basis, or as otherwise required, to maintain the Project schedule.
 - a. If it becomes necessary to relocate any element due to failure of a Prime Contractor to coordinate the Work, the responsible Contractor shall bear the cost for such relocation, including costs for additional work performed by other Prime Contractors as a result of the responsible Prime Contractor's failure to properly coordinate.
 - b. Responsibility for the costs for any such additional work shall be as determined by the Architect. In the event an agreement as to responsibility cannot be reached, the determination by the Architect shall be final and binding.
 - H. Final Coordination Drawings: Once all necessary information has been added to the BIM Layout Drawings the HVAC Contractor shall prepare a conformed file and review for clashes to be resolved. All clashes shall be addressed to create the final layout drawings and BIM Model. The HVAC Contractor (Prime Coordinator) shall perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts with each Prime prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect. Each Prime Contractor required to produce Coordination Drawings shall sign off on each of the other Coordination Drawings to indicate agreement and recognition of the indicated routing and layouts and the correlation with adjoining or contiguous work of all contracts.
 1. After sign-off, no unauthorized deviations will be permitted. If deviations are made without consent of the other affected Prime Contractors, the responsible Prime Contractor shall remove and correct the affected work at no additional cost to the Owner.
 2. Final Submission: Following agreement and sign-off by all Prime Contractors, the HVAC Contractor shall submit the files of all the systems to the Architect for review as follows; one (1) electronic copy (.pdf) of all 2D drawings, one (1) Navisworks NWC file, and one (1) Navisworks NWF file of completed Coordination Drawings. Furnish one additional electronic copy (.pdf) to all other Prime Contractors and applicable subcontractors. The files submitted shall note any conflicts or changes required that require further input or direction of Architect.
 - a. Architect will review for resolution of conflicts and will process Coordination Drawings for general conformance with design only.
 - I. Shop Drawing Coordination: Shop Drawings produced separately from Coordination Drawings shall be reviewed by the submitting Prime Contractor in detail to assure conformance with coordination process. Included a statement and signature on shop drawings indicating contractor's review and conformance with Coordination Drawings
 1. Architect's review of shop drawings submitted during the coordination process will be considered independent of Coordination Drawing review and need not take into consideration information included on Coordination Drawings.
 2. If changes resulting from shop drawing review affect work included in Coordination Drawings, the Prime Contractor submitting the shop drawing shall correct the Coordination Drawing, coordinate with affected Prime contractors and resubmit for approval. Perform correction and coordination without delay or additional cost to avoid impacting the construction schedule.

- J. Record Coordination Drawings: Each Prime contractor shall retain record copies of final Coordination Drawings and building Information Modeling files (BIM) as a working reference. Any revision which may become necessary during the course of the Work shall be neatly and accurately recorded on the record copies by each Prime Contractor. Each Prime Contractor is responsible for maintaining record Coordination Drawings up-to-date.
1. Each Prime Contractor shall maintain one copy of record Coordination Drawings available at the site.
 2. All changes in the Work of any Contract, whether or not associated with a change in cost, shall be recorded on the Coordination Drawings.
 3. Coordination Drawings and any subsequent changes shall be incorporated into As-Built Drawings.
 - a. Subject to approval of the Owner and Architect, final updated Coordination Drawings may be used for As-Built Drawings.
 - b. As-Built Drawings shall also incorporate details of structural elements cut during construction and supplemental bracing or reinforcement.
- K. Resolution of Conflicts: Where conflicts occur either on Coordination Drawings or during actual installation in the field, and they can be resolved by rerouting conflicting elements or installing risers, offsets, falls, curves, pull boxes, transitions or other solutions, the affected Prime Contractor shall bear the expense of adjustments required, including costs for labor and material, and shall modify the Coordination Drawings to reflect the changes at no additional cost.
- L. Managing as-built and recording BIM Model: The HVAC Contractor shall periodically coordinate with each of the prime contractors the updates to the BIM Model and all the systems and components. The prime contractors are responsible for updating their model to reflect as built information and provide this to the HVAC contractor for final model update. Any prime contractor who does not provide the revisions when requested will be subject to the assessment of costs to perform this work. The HVAC Contractor shall deliver a final and complete BIM model showing all as-built conditions at the completion of the project to the Architect.

1.5 COORDINATION DRAWING CONTENT

- A. The Prime Contractor responsible for Work in each of the following categories shall prepare or arrange for preparation of Coordination Drawings and 3D model for the following systems:
1. Kitchen equipment
 2. HVAC systems
 3. Plumbing systems
 4. Fire protection systems including sprinklers
 5. Electrical systems
 6. Opening and sleeves in structural slabs
 7. Ceiling systems
 8. Wall Systems
- B. Include on Coordination Drawings and in 3D model the information listed below for each of the following categories of Work:
1. Food Service Equipment
 - a. Locations and dimensions of food service equipment
 - b. Access panels and hatchway
 - c. Rough-in locations for mechanical and electrical services.

2. HVAC Systems:
 - a. Sizes and bottom elevations of rectangular ductwork.
 - b. Sizes and centerline elevations of round ductwork, piping and conduit.
 - c. Acoustical lining in ductwork
 - d. Identification of low, medium and high pressure ductwork.
 - e. Locations of major components, including dampers, valves, diffusers, cleanouts and electrical distribution equipment.
 - f. HVAC and ATC Panels
3. Electrical Systems: Equipment Control Panels
 - a. Horizontal and vertical runs of conduit 1-1/4 inch diameter and larger.
 - b. Light fixture location
 - c. Smoke detector locations
 - d. Speaker locations
 - e. Panel boards, switch boards, switch gear, transformers, busways, generator and motor control center.
 - f. System racks.
 - g. Exit signs, strobe/horn and emergency battery pack locations.
 - h. Pull boxes dimensional from column centerlines.
 - i. Cable tray pathways.
4. Plumbing and Fire Protection System:
 - a. Sizes and centerline elevations of sprinkler piping
 - b. Sprinkler head locations with elevations referenced to ceiling heights.
 - c. Locations of major valves. Test and drain ports.
 - d. All rain water piping
 - e. All plumbing piping including domestic water, sanitary, vent piping, and clean out locations
5. Structural Work:
 - a. Openings and sleeve locations required in slabs, walls, beams, and other structural elements, including required openings not indicated on Contract Documents
 - b. Slab edge locations
 - c. Columns, beams, joists, hangars, connections, braces, and other structural systems.
6. Ceiling Systems:
 - a. Locations in ceiling of mechanical, fire protection and electrical items, including grilles, registers, diffusers, light fixtures, smoke detectors, sprinkler heads, exit signs, speakers and other items.
 - b. Conform to locations indicated on Contract Drawings to the maximum extent possible.
 - c. Indicate positions relative to acoustical ceiling grid where applicable.
7. Wall Systems: All walls, chases, and other components.

1.6 STRICT COMPLIANCE WITH COORDINATION REQUIREMENTS

- A. Each Prime Contractor recognizes that they must cooperate and coordinate all of their work.
- B. Any Prime Contractor that does not comply with the established timelines and requirements for coordination will have their payment request withheld until the necessary work is completed. In

addition, the Prime Contractor may be charged the costs for doing any coordination drawing or BIM Modeling that is part of their contract responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.3117

SECTION 01.3200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. The Work under the Contract Documents shall be planned, scheduled, executed, reported and accomplished using the cost and resource loaded "Critical Path Method" schedule, in calendar days (excluding Saturdays, Sundays and legal holidays). The provisions of the General Requirements, Division 01, and the directions of the Project Coordinator (General Contractor) are to be followed by the Contractor in scheduling and coordinating construction activities. The scheduling Services of the Project Coordinator are part of its contract with the Owner, but nothing herein relieves the obligations of each Contractor to schedule their own construction activities and nothing herein alters the obligation of each Contractor to resolve all supervision, coordination and scheduling issues between and among the Sub-Contractors. In addition, the requirements for subordinate coordination responsibilities and scheduling per the Division 01 General Requirements must be followed by all contractors.
- B. General Scheduling Requirements: Any of the scheduling requirements, including, but not limited to, the format, content and complexity, can be waived or modified by the sole discretion of the Construction Manager and Owner only. Any modification or waiver by the Construction Manager shall not be grounds for any claim by Contractor against Owner, Construction Manager or Architect. Project Coordinator (General Contractor) shall submit preliminary and final construction schedule and all schedule updates in electronic format with no restrictions for viewing and analyzing using the same software with which the schedule was created. Electronic format shall be submitted to the Construction Manager and to any Contractor that Construction Manager may direct.
- C. The General Contractor is designated as the Project Coordinator for this Project unless noted otherwise. The Project Coordinator and other Prime Contractors are responsible for coordination of the Work. The Project Coordinator is responsible for making all coordination decisions not mutually agreed to by all affected Prime Contractors. Disputes between or among the Project Coordinator and one or more other Prime Contractors and disputes in connection with the construction schedule, the furnishing of additional resources to meet the project schedule, job coordination and all aspects of the means and methods of construction shall be submitted promptly to the Project Coordinator for a final construction decision. The Project Coordinator and the affected Prime Contractor or Contractors shall in connection with all submissions for a final construction decision provide actual written notice contemporaneously to the Construction Manager. The final construction decision of the Project Coordinator must, at all times, be consistent with content and intent of the Contract Documents and the latest accepted schedule. Should the Owner or Construction Manager determine that, in its sole judgment, substantial interests have been placed at risk by the final construction decision of the Project Coordinator, then the Owner or Construction Manager reserves the right to overrule the final construction decision of the Project Coordinator. The exercise of discretion by the Owner or Construction Manager in this regard shall be unchallengeable, subject only to a determination that the decision constituted an abuse of discretion. In all other instances, the final construction decision of the Project Coordinator will be observed, accepted and fully followed by all Prime Contractors and their Subcontractors on the project, subject only to the commencement of any litigation between the Prime Contractors. The progress of the Work in accordance with the final construction decision of the Project Coordinator shall not be delayed pending litigation between the Prime Contractors. The damage remedy provided in favor of the Project Coordinator or other Prime Contractor shall be exclusive remedy for disputes between the contractors. The contractors, including the Project

Coordinator, shall have no right of action against the Owner, Architect or Construction Manager in connection with such disputes.

- D. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
1. Preliminary Construction Schedule.
 2. Contractor's Construction Schedule.
 3. Submittals Schedule.
 4. Daily construction reports.
 5. Material location reports.
 6. Field condition reports.
 7. Special reports.
- E. Related Sections include the following:
1. Division 01 Section "Summary of Multiple Contracts" for preparing a combined Contractor's Construction Schedule.
 2. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
 3. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 4. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
 5. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.
 6. Division 01 Section "Closeout Procedures" for submitting photographic negatives as Project Record Documents at Project closeout.
 7. Division 01 Section "Submittal Procedures" for submitting schedules and reports.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources and include shop drawing preparation, work activities, equipment testing and training and any other actions required for the prosecution of the work.
1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 2. Predecessor activity is an activity that must be completed before a given activity can be started.
 3. Successor activity is an activity that follows another activity in the network.
- B. Cost Loading: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by Architect.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

- D. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains the lowest float value.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time belongs to Owner and shall only be assigned with Owner's representative approval.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- H. Major Area: A story of construction, a separate building, or a similar significant construction element.
- I. Milestone: A key or critical point in time for reference or measurement.
- J. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
- K. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.3 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article and in-house scheduling personnel to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Submittals Schedule: Submit one (1) electronic copy of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Lead Time
 - 7. Date required on site
 - 8. Scheduled date for Architect's and all consultants and agencies final release or approval.
- C. Preliminary Construction Schedule: Submit one (1) electronic copy.
 - 1. Approval of cost-loaded preliminary construction schedule will not constitute approval of Schedule of Values for cost-loaded activities. The electronic copy is to be provided with no restrictions for viewing and analyzing using the same software with which the schedule was created.

- D. Final Construction Schedule: Submit electronic Copy to maintained in OutBuild and Procore for the duration of the project.
- ~~1. Submit an electronic copy of schedule, on CD R, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label. The electronic copy is to be provided with no restrictions for viewing and analyzing using the same software with which the schedule was created.~~
- E. Final Construction Schedule Reports: Submit one electronic Copy of each of the following computer-generated reports with the Final Construction Schedule. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
1. Activity Report: List of all activities sorted by Project Phase, Project Area, Prime Contractor and then early start date. Provide a duration, cost and total float value for each activity.
 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
- F. Daily Construction Reports: Submit Electronic Copy at weekly intervals.
- G. Material Location Reports: Submit Electronic Copy at weekly intervals.
- H. Field Condition Reports: Submit Electronic Copy at time of discovery of differing conditions.
- I. Special Reports: Submit Electronic Copy at time of unusual event.

1.4 QUALITY ASSURANCE

- A. Scheduler's Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Construction Manager's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:
1. Review software limitations and content and format for reports.
 2. Verify availability of qualified personnel needed to develop and update schedule.
 3. Discuss constraints, including phasing, work stages, area separations, interim milestones and partial Owner occupancy.
 4. Review delivery dates for Owner-furnished products.
 5. Review schedule for work of Owner's separate contracts.
 6. Review time required for review of submittals and resubmittals.
 7. Review requirements for tests and inspections by independent testing and inspecting agencies.
 8. Review time required for completion and startup procedures.
 9. Review and finalize list of construction activities to be included in schedule.
 10. Review submittal requirements and procedures.
 11. Review procedures for updating schedule.

1.5 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 - 2. Initial Submittal: Submit concurrently with preliminary schedule. Include submittals required during the first 90 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead-time for manufacture or fabrication.
 - a. Show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early or late completion date, unless specifically authorized by Change Order.
- C. Each activity on the network shall have indicated for it the following:
 - 1. A single duration, no longer than 20 days (i.e., the single best estimate of the expected elapsed time considering the scope of work involved in the activity) expressed in working days. Normal holidays and weather delays shall be included. One critical path shall be shown for the schedule.

2. An activity identification number will be assigned to each activity. The identification number will be in a format acceptable to Project Coordinator.
 3. A brief description of the activity will be included. If this description is not definitive, a separate listing of each activity and a descriptive narrative may be required.
 4. Each activity shall be cost loaded to indicate the total estimated budget of the activity. No activity budget shall exceed \$50,000. Material and/or equipment costs to be paid as stored material shall be listed separately. In addition, activities shall be cost-loaded as requested by Owner's representative for payment purposes.
 5. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 40 calendar days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 2. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect and Owner's administrative procedures necessary for certification of Substantial Completion.
 4. Each activity (except for procurement activities) shall be man-hour loaded with the estimated man-hours to be expended on each activity.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
5. Phasing: Arrange list of activities on schedule by phase.
 6. Work under More Than One Contract: Include separate activities for each contract.
 7. Work by Owner: Include separate activities for each portion of the Work performed by Owner.
 8. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 9. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary". Delivery dates indicated stipulate the earliest possible delivery date.
 10. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 11. Work Stages: For each Phase of the Work as described on the drawings, indicate stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards
 - b. Submittals

- c. Purchases
 - d. Mockups
 - e. Fabrication
 - f. Sample testing
 - g. Deliveries
 - h. Installation
 - i. Shop and Field Tests and inspections
 - j. Changes in traffic patterns
 - k. Moving and occupancy timeframes
 - l. Adjusting
 - m. Curing
 - n. Startup and placement into final use and operation
 - o. Punchlist
- 12. Area Separations: Identify each major area of construction for each Phase of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following phase completion and contract milestone dates listed in the contract documents:
 - a. Foundation completion.
 - b. Structural completion.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
- C. Milestones and Phases: Include milestones and phases indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Individual Phase Completion(s), Substantial Completion, Final Completion and the following interim milestones:
 - 1. All project milestones and phases listed in the Contract Documents.
- F. Cost Correlations for Progress Payments: Provide cost loading of the Preliminary and Final schedule as follows:
 - 1. Each activity on the construction schedule shall be allocated a dollar value in accordance with 2.2.C.4, above. Each activity's assigned cost shall consist of labor, equipment, and materials costs, and a pro rata contribution of overhead and profit. The sum of activities costs shall be equal to the total Contract Price. In submitting cost data Contractor certifies that the costs are not unbalanced and that the value assigned to each activity represents Contractor's estimate of the actual costs of performing that activity.
 - 2. The accepted schedule of values shall represent a fair, reasonable and equitable dollar cost allocation for each activity on Contractor's construction schedule.
 - 3. If it is determined that the cost data does not meet the requirements for a balanced bid breakdown in the opinion of Owner's representative, Contractor will present documentation substantiating the cost allocation. Cost allocations shall be considered unbalanced if an activity on the construction schedule has been assigned a disproportionate allocation of direct costs, overhead and profit.

- D. G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.
- H. Computer Software: Prepare schedules using one of the following programs. Microsoft Project is not an acceptable option.
 - 1. Mirosoft Project
 - 2. OutBuild

2.3 PRELIMINARY CPM CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within thirty (30) calendar days of date established for the Notice of Intent to Award.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Provide construction activities of construction. Include costs for each activity.

2.4 FINAL CPM CONSTRUCTION SCHEDULE

- A. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than fifteen (15) calendar days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 - 2. Conduct educational workshops to train and inform key Project personnel, including each contractor's personnel, in proper methods of providing data and using CPM schedule information.
 - 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 4. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.
- B. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a network diagram to identify the critical paths.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Within each Phase, include activities and durations for following activities:
 - a. Preparation and processing of submittals.

- b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and commissioning.
 2. Critical Path Activities: Identify critical path activities, including those for any interim Phase completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
- C. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
 1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Principal events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Dollar value of activity (coordinated with the Schedule of Values).
- D. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports and electronic copies on a monthly basis showing the following:
 1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.5 FIELD REPORTS

- A. Daily Construction Reports: Each contractor shall prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.

3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries
6. High and low temperatures and general weather conditions.
7. Accidents.
8. Meetings and significant decisions.
9. An account of work performed on the project.
10. Stoppages, delays, shortages, and unusual events.
11. Meter readings and similar recordings.
12. Site visits or inspections by authorities having jurisdiction.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction or Work Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial Completions and occupancies.
19. Substantial Completions authorized.

- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit a request for information to Construction Manager with copy to the Architect on CSI Form 13.2A or other form approved by Architect. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.6 SPECIAL REPORTS

- A. General: Submit special reports directly to Construction Manager within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, and response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Construction Manager/Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 FIELD REPORTS

- A. Contractor is to submit Daily Construction Reports daily to the Construction Manager. Failures to maintain timely or complete reports may result in partial withholding of monthly payment applications.

3.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Requirements for the General Contractor as the Project Coordinator. As Project Coordinator, the Contractor for General Construction shall:
1. Engage a scheduling consultant to perform, for and on behalf of the Contractor, the Contractor's duties and responsibilities as Project Coordinator, including those specifically set forth below. The scheduling consultant shall have a minimum of five (5) years prior experience in the design, preparation, publication and revision of PCM network schedules, including scheduling experience on multiple prime contractor, multiple phase construction projects. The Contractor shall submit the name, credentials and experience of its proposed scheduling consultant to the Owner, Architect and Construction Manager for approval within five (5) days of being awarded the Contract. The Contractor; (a) shall not terminate the engagement of any approved scheduling consultant without at least thirty (30) days prior written notice to the Owner, Architect and Construction Manager, and then only after submission and approval of a replacement scheduling consultant in accordance with the provisions of this paragraph; and (b) shall not engage any scheduling consultant as to whom the Owner, Architect and Construction Manager, at any time, make reasonable objection and shall promptly replace such scheduling consultant with another approved in accordance with the provisions of this paragraph.
 2. If the Contractor demonstrates to the satisfaction of the Construction Manager that it employs a person with experience and qualifications in the design, preparation, publication and revision of CPM network schedules, then, upon receipt of written approval from the owner, the Contractor may assign such employee as the scheduling consultant described herein;
 3. Attend and chair meetings at least every two weeks during construction with all separate contractors, the Owner, the Architect and Construction Manager to review progress and to plan and coordinate the activities of each separate contractor with the Work of the Contractor and of the Owner;
 4. Advise the owner, Architect and Construction Manager of delays or potential delays;
 5. Formulate and recommend to the Owner, Architect and Construction Manager plans, including a revised Project construction schedule, to prevent, minimize or recover from delays or potential delays;
 6. Make recommendations to the Owner, Architect and Construction Manager concerning whether requests for extensions of time should be granted and the effect such extensions would have on the Project construction schedule;
 7. Revise the Project construction schedule to reflect extensions of time granted by the Owner;
 8. Resolve objections made by other contractors and make adjustments to the schedule that are mutually agreeable to all prime contractors and the Owner;
 9. Prepare monthly schedule updates comparing the actual progress of all Work with the scheduled progress.

- B. Scheduling requirements for all Contractors other than the Project Coordinator (General Contractor). All Contractors shall:
1. Within fifteen (15) days after the Notice to Proceed for Construction, prepare and submit to the Project Coordinator and Construction Manager a preliminary construction schedule, in a form compatible with the requirements herein. Such construction schedule shall include the Work of the Contractor, show by appropriate notation whenever the commencement, progress or completion of an activity depends upon the commencement, progress or completion of another activity (including activities of separate contractors) and show the timely and orderly completion of all Work in accordance with the requirements of the Contract Documents, including such interim "milestone" dates as are identified therein. If not accepted, the construction schedule shall be promptly revised by the Contractor in accordance with the recommendations of the owner, the Architect, the Construction Manager and the Project Coordinator and resubmitted for acceptance and incorporation into the project construction schedule prepared by the project coordinator;
 2. Within thirty (30) days of the Notice to Proceed prepare and submit to the Project Coordinator and Construction Manager a final construction schedule in a form compatible with the requirements herein for the project Coordinator's use in submitting the final Construction Schedule.
 3. Shall cooperate and participate with the Project Coordinator and the other contractors in connection with all the activities described in this section;
 4. Shall notify the Project Coordinator, the Owner and the Construction Manager in writing if the Contractor objects to the Project construction schedule or any revision thereto, stating its objection and the reasons therefor within two (2) days after the Contractor's receipt of the Project Construction schedule or any updates or revisions to which objection is made. In the absence of such timely notice, any such objection shall be deemed waived and released and the Contractor shall comply with the Project construction schedule or revision thereto. If a timely objection is made, the Contractor and the Project Coordinator shall agree to a resolution of the objection within ten (10) days. In the absence of such agreement, the Owner may, in addition to any other rights and remedies under the Contract Documents, appoint the Construction Manager or an independent scheduling consultant to resolve the objection, whose decision shall be final and binding upon the Contractor and the Project Coordinator. All cost and expense incurred by the Owner to resolve such objection shall be charged to and borne in equal shares by the Contractor, the Project Coordinator and their respective Sureties;
 5. Shall not be entitled to claim any damages against the Owner, nor any adjustment in the Contract Time or the Contract Sum in connection with the Project construction schedule, any revision thereto, or any resolution of an objection to either the Project construction schedule or a revision thereto; and
 6. Acknowledges and agrees that the Owner has no duty or responsibility toward the Contractor to cause the Project Coordinator to perform or to competently perform its duties and that the Contractor's sole claim in the event of any failure of the Project Coordinator to perform or to competently perform its duties shall be against the Project Coordinator.
 7. Should any Contractor intend or plan to complete the Work, or any portion thereof, earlier than any applicable Completion Date or the Contract Time, Contractor shall give timely and reasonable written notice of this fact to the other Contractors, Project Coordinator and Construction Manager.

Project Coordinator shall have the discretion to agree to or reject such early completion plan by Contractor, subject to the rights of Contractor to litigation between prime contractors. The Project Coordinator shall have no duty or obligation to agree to, or to cooperate with Contractor regarding any early completion plan or proposal by Contractor and shall not be liable for any damages of Contractor because of the rejection by Project Coordinator of said plan. Earlier completion of any portion of the work shall be promoted wherever feasible and all Contractors must cooperate and accelerate towards earlier completion of any portion of the work unless such work affects the quality of work as determined by the Construction Manager. All Contractors shall cooperate and accelerate work as determined by Project Coordinator unless quality of work is affected as determined by the Construction Manager. No claims for acceleration to complete early or to meet project schedule will be considered.

- C. Contractor's Construction Schedule Updating: At bi-weekly intervals or as requested by the Construction Manager update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting. Provide an electronic copy of each monthly schedule update. Provide an indication of the total project float in the schedule on a monthly basis.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.
 - 4. Items not ordered by the contractor in a timely manner for incorporation into the Work will not be considered for claims by the Contractor for additional time or costs.
- D. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractors with a need-to-know schedule responsibility. Provide an electronic copy to the Construction Manager and distribute to other contractors at the direction of the Construction Manager.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.
- E. The Critical Path Method type construction schedule will be used to monitor job progress and as a means to make monthly payments to Contractors. Contractor will be responsible for providing all information concerning the sequencing, logic and durations of all activities as well as providing the initial logic network diagram. Once the schedule is accepted, Contractor will be responsible for providing monthly update information on logic, percent complete, actual start and finish dates and duration changes. Contractor will not be required to produce the computerized printout of the schedule updates. This will be performed by Project Coordinator using information provided by Contractors. Copies of the updated schedule are to be distributed at the progress meetings by the Project Coordinator.
- F. From each Contractor's initial schedule submittal and from information received at the monthly schedule update meetings, computerized and dated tabular schedule reports, or updated network diagrams, or bar charts will be produced by Project Coordinator which will be reviewed by each Contractor for accuracy and integrity. It

shall at all times remain each Contractor's responsibility to schedule and direct his forces in a manner that will allow for the completion of the work within the contractual period.

- G. It should be clearly understood that the initial schedule and all update information must be provided by each Contractor and that this information is a representation of the best efforts of each Contractor and his subcontractors as to how they envision the work to be accomplished. Similarly, all progress information to be provided by and through each Contractor must be an accurate representation of his or his subcontractor or supplier's actual performance. The schedule shall at all times remain an accurate reflection of each Contractor's actual or projected sequencing of work. Once accepted, adherence to the established CPM schedule shall be obligatory upon each Contractor and his subcontractors for the work under this Contract. Owner may require each Contractor to revise the schedule if, in his judgment, the schedule does not accurately reflect the actual execution of the work, or is in violation of any provision of this CPM scheduling specification, and each Contractor shall revise the schedule as often as is necessary during the course of performance of the work without additional cost to Owner.
- H. The work shall be started on the date indicated in the Notice to Proceed and shall be executed with such progress as may be required to prevent delay to other Contractors or to the general completion of the project. The work shall be executed at such times and in or on such parts of the project, and with such forces, material and equipment, as to assure completion of the work in the time established by the Contract. Additionally, each Contractor shall, at all times, schedule and direct his work so that it provides an orderly progression of the work to completion within the specified Contract Time.
- I. Each Contractor agrees that whenever it becomes apparent from the current monthly CPM Schedule update that delays to the critical path have resulted and these delays are through no fault of Owner or Construction Manager, and hence, that the Contract completion date will not be met, or when so directed by Owner's representative or Project Coordinator he will take some or all of the following actions at no additional cost to Owner.
 - 1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.
 - 2. Increase the number of working hours per shift; shifts per working day, or days per week; the amount of construction equipment; etc., or any combination of the foregoing to substantially eliminate the backlog of work.
 - 3. Schedule activities to achieve maximum practical concurrence of accomplishment of activities, and comply with the revised schedule.
 - 4. Contractor shall submit for reviewing a written statement of the steps he intends to take, to remove or arrest the delay to the schedule. If Contractor fails to submit a written statement of the steps he intends to take or fails to take such steps as required by the Contract, Owner may direct the level of effort in manpower (trades), equipment, and work schedule (overtime) to remove or arrest the delay to the critical path in the accepted schedule, and Contractor shall promptly provide such level of effort at no additional cost to Owner. In addition, should schedule delays persist, Contractor's surety will be asked to attend meetings to update the schedule.
- J. In the event the Owner determines that the performance of the Work, the work of separate contractors or of the Owner has not progressed or reached the level of completion required by the Contract Documents, or the Project construction schedule, the Owner shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation: (1) working additional shifts or overtime; (2) supplying additional manpower, equipment and facilities; (3) engaging a scheduling consultant to make recommendations concerning the corrective measures to be taken, with the

cost and expense of such engagement to be borne by the Contractor, the separate contractors and their respective Sureties in such proportions as the Architect and Construction Manager may, in their sole discretion, determine to be just; and (4) other similar measures. Such measures shall continue until the progress of construction complies with the required level of completion. The Owner's right to require such measures shall not impose upon the Owner any duty or obligation to the Contractor, its Surety or any other party. Except as specifically provided in this paragraph, the Contractor shall not be entitled to an adjustment in the Contract Time or the Contract Sum in connection with such measures required by the Owner. If the Contractor (its agents, subcontractors, suppliers or vendors) has not caused or contributed to the failure of construction to progress or reach the required level of completion, then the Contractor shall be entitled to a Change order for an amount not to exceed the reasonable additional labor cost of any overtime or shift work directed by the Owner under this paragraph. If the Contractor (its agents, subcontractors, suppliers or vendors) has caused or contributed to the failure of construction to progress or reach the required level of completion, then the Contractor and its Surety shall be liable to the Owner for any and all costs and expenses incurred by the Owner due to any measures directed by the Owner under this paragraph, including the cost of any overtime or shift work performed by the Owner or by separate contractors. The Owner may exercise the rights furnished to the Owner under this paragraph as frequently as the Owner deems necessary to ensure that the progress of construction will comply with the required level of completion. If the Contractor fails to perform its duties as the Project Coordinator adequately or to the Owner's satisfaction, the Owner may, in addition to its other rights and remedies, appoint a substitute Project Coordinator who shall act in the place and with the authority of the original Project Coordinator. In that event, the Owner may, in its sole discretion, choose one of the separate contractors or an independent consultant as the substitute Project Coordinator. The cost and expense incurred by the Owner to engage such substitute Project Coordinator shall be charged to and borne by the Contractor and its Surety.

- K. The Contractor's failure to cooperate and participate with the Owner, the Architect, the Construction Manager and separate contractors in the development and review of construction schedules and updates as provided in this section shall be a material breach of its obligations, entitling the Owner to exercise all rights and remedies under the Contract Documents and applicable law. In no event shall any revision to any construction schedule constitute the basis for an adjustment in the Contract Time or the Contract Sum unless such adjustment is agreed to by the Owner and authorized pursuant to Change Order.
- L. The Project Schedule is to be used by the Contractors as a guide and all contractors and sub-contractors shall be responsible to perform work to ensure that the Project is completed by the Project Contract completion date(s) and all milestone dates established in the Contract Drawings are met. Any claims for additional costs associated with completion of the Work within the required Contract time frames will not be considered. The Contractor and all Sub-contractors, who feel extra time, in any form such as shift work, overtime, and premium time, is necessary to meet Contract requirements regardless of trade, should include these costs in their bids. All Contractors must recognize that although their work might not require shift, overtime, or premium timework for completion within the stipulated time frame, it may be required in order to allow other Contractors to complete within the time frame. Contractors must allow for these overtime requirements and include the costs necessary to allow the other Contractors to complete within the specified time. Failure to recognize the extra costs in his bid shall not relieve the Contractor from utilizing shift, overtime, or premium time work in performance of his Contract, all costs associated with meeting the time frames indicated in the construction schedules shall be included in the Contract Price. Construction Manager, Architect and Owner reserve the right to withhold processing of any monthly payment applications from any contractor if schedule compliance is not being strictly adhered to. Such payment may be withheld until the Contractor makes corrective action to comply with project schedule.

- M. Contractor Approval and Certification. Approval by Contractor of the preliminary CPM Construction Schedule, the final CPM schedule and schedule updates, shall be evidence of the Contractor's agreement that the proposed schedule or schedule revision to the Construction Schedule is a true and accurate representation of his plan to complete the Work, including all Change Orders that are in Contractor's possession as of the foregoing date, that the schedule or schedule revision fully complies with the requirements of the Contract Documents, that he shall prosecute the Work in accordance with this schedule revision, subject to any change therein which is implemented in accordance with the Contract Documents and that he has met and coordinated with and obtained the acceptance or approval of said schedule revision by all other parties that are affected thereby.

3.3 NETWORK REQUIREMENTS

- A. The CPM Schedule shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned by Contractor. The basic concept of the network analysis diagram is to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of succeeding activities. A time scaled precedence format will be followed. The detailed network diagram will be time scaled showing a continuous flow from left to right.
- B. The CPM schedule shall include a weather calendar that contains non-working days in addition to weekend and holidays to account for anticipated inclement weather days beyond those normally anticipated for the project area.
- C. Failure to include in the CPM schedule any element of Work required under the performance of this Contract shall not excuse Contractor from completing all Work required within the applicable completion time, notwithstanding Owner's network review.
- D. A CPM schedule which shows a completion of any portion of the Work prior to the contractual completion date may be accepted but in no event shall be acceptable as a basis for a claim for delay or cost reimbursement against Owner or its representatives by Contractor. The period of time between the Contractor's baseline accepted CPM schedules projected completion dates and the contractual stipulated completion dates, if any, will be treated as Project Float. The Owner's right to utilize Project Float is as provided in paragraph 3.8.
- E. If a review of the submitted CPM Schedule indicates a work plan which will not complete the work within the time requirements stated in the Contract, it shall be the responsibility of Contractor to revise the CPM Schedule as required and resubmit it until it is acceptable. Failure by Contractor to submit an acceptable schedule may, at Owner's sole discretion, justify the withholding of any partial payment(s) otherwise due under the Contract.
- F. Acceptance of the schedule shall not constitute a representation by Owner that the work can be completed as shown on the schedule.
- G. The schedules prepared by the Contractor and by the Project Coordinator, if any, under this Article shall be in the form of a CPM arrow network diagram, preferably organized by IJ nodes" and shall include: (1) a shop drawing and submittal schedule noting the relevant submittal, approval, order, fabrication and delivery durations; (2) integration of the shop drawing and submittal schedule with the installation activity logic in order to determine the effect of delivery on installation of any items of work; (3) the planned progressions of construction work showing the activities and duration of the work of each contract phase and clearly noting any interim milestone dates; (4) the appropriate restraints in order to clearly identify the interrelationships of work and crew and trade flow; (5) logic (CPM arrow network) diagrams summarized into a summary bar chart format that is

capable of displaying current progress of all Work; (6) a computerized mathematical analysis of the CPM logic with each monthly schedule responsibility, activity duration, early (target) start date, early (target) finish date, late start date, late finish date, work tasks critical to completion within the Contract Time and any interim milestone dates; and (7) crew sizes and planned labor hours for each activity shown on the schedule. The Contractor shall deliver to the Owner, upon Construction Manager's request and in the format requested by the Construction Manager, copies of all electronic files (including all schedule logic, restraints and all other electronic data and information used to create and maintain the schedule that the Owner may request) that comprise or relate to such schedules, including the original project schedule, all schedule updates, any recovery schedules and any schedule revisions.

- H. The Project Schedule shall be submitted by the Contractor for all work. All schedule and work items must be in conformance with the project schedule requirements listed in the project manual including any phasing or other milestones provided. The Project Coordinator shall incorporate all contractors' items of work and issue project schedule. Upon written approval of the schedule by the Contractor and Construction Manager and review by the Architect, it shall with respect to time, become the essence of the Contract and the Contractor who does not comply may be held in violation of Article 8, of the General Conditions, "Delays and Extension of Time". The project schedule may be changed or revised only with the written consent of the Construction Manager, Owner and Architect. If the Contractor does not comply with all the scheduling requirements of the Contract and time lines, the Owner reserves the right to deduct \$800.00 from the Contract amount for each day that Contractor does not comply and Owner may also proceed with enforcing other requirements of the Contract including Article 2.4 of the General Conditions of the Agreement. No payment applications will be processed without an approved project schedule accepted by all contractors.
- I. Any preparation, review, enforcement and updating of the project schedule do not make Owner, Construction Manager or Architect liable to Contractor for time, cost overruns or schedule changes which are required to maintain project contract completion date and all milestone dates established in the Project Manual.
- J. Contractor is responsible for determining the sequence and logic of activities, the time estimates of the detailed construction activities and the means, methods, techniques and procedures to be employed with regard to his portion of the Work. The Construction Schedule shall represent Contractor's best judgment of how he shall prosecute the Work in compliance with the requirements of the Contract Documents. Contractor shall ensure that the Construction Schedule is current and accurate and is properly and timely monitored, updated and revised as Project conditions and the Contract Documents may require, and as may be directed by Project Coordinator.
- K. Contractor shall consult with his major Subcontractors relating to the preparation of his construction plan and Construction Schedule. Major Subcontractors shall receive copies of those portions of Contractor's Construction Schedule that relate to their Work and shall be continually advised of any updates or revisions to the Construction Schedule as the Work progresses. When Contractor submits his Construction Schedule to the Project Coordinator or makes any proposed updates or revisions to such Schedule, it shall be concluded by Construction Manager, Owner and Project Coordinator that Contractor has consulted with and has the concurrence of his major Subcontractors. Contractor shall be solely responsible for ensuring that all Subcontractors comply with the requirements of the Construction Schedule for their portions of the Work.
- L. The Completion and Milestone Dates set forth in the Contract Documents represent only the major items of Work and may include interface dates with the construction activities of others. Completion and Milestone Dates are Contract requirements and are of the essence to the Contract Documents and to the coordination of the Work by the Contractor. Completion and Milestone Dates represent the latest allowable

completion time for those portions of the Work to which each Date relates. The Dates are not intended to be a complete listing of all Work under the Contract Documents or of all interfaces with work performed by the Contractors or others. The Contractor shall determine the time requirements for all such interfaces and shall be responsible for planning, scheduling and coordinating the Work in order to complete in accordance with those requirements.

3.4 SCHEDULE UPDATES

- A. A biweekly Schedule Update Meeting will be held one (1) week prior to the progress meeting at the construction site to review and update the CPM Schedule. Project Coordinator and Contractor will attend the Schedule Update Meeting. Actual progress of the previous month will be recorded and scheduling of future work activities will be reviewed. The duration of activities and their logical connections may be revised as needed. Decisions made at these meetings and agreed to by all parties are binding with the exception that no contractual completion dates will be modified without formal written requests and acceptance as specified herein. Contractor must provide the following information for each update at a minimum:
1. Actual start and finish dates for all completed activities.
 2. Actual start dates for all started but incomplete activities and estimated remaining durations.
- B. Provide a biweekly Progress Status Report, which provides a narrative explanation of progress identified in the revised construction schedule. An electronic copy of each monthly schedule update is to be provided to the Construction Manager at the end of each month. The electronic copy is to be provided with no restrictions for viewing and analyzing using the same software with which the schedule was created. The monthly status report shall indicate the following items:
1. Summarize revisions made to the Construction Schedule since the previous submittal.
 2. Work completed during the reporting period.
 3. A printed copy of the entire project schedule including the updated early and late dates, activity durations, predecessors and successors and a list of any logic and duration changes executed during the update period.
 4. Work anticipated to be started during the next period, including those activities already in progress.
 5. Problem areas, anticipated delays, and their impact on the schedule.
 6. Corrective action recommended, and its effect.
 7. The effect of changes on schedules of other prime Contractors.
 8. Updated Tabulation of Contract Time and a printed copy of the project critical path.
 9. An evaluation of the overall status of the schedule for the job.
- C. Application for Payment: Contractor understands and agrees that the submission and acceptance of progress updates and the receipt of progress reports are an integral part and basic element of the Applications for Payment; and that Contractor shall not be entitled to any progress payment under the Contract Documents until Contractor has fully complied with the requirements of this Section.
- D. Review by the Construction Manager and Owner of Contractor's Construction Schedule, or any revisions or updates thereto, are advisory only and shall not relieve Contractor of the responsibility for accomplishing each portion of the Work within each and every applicable Completion Date. Omissions and errors in the approved or accepted Construction Schedule, or any revisions or updates shall not excuse performance, which is not in compliance with the Contract Documents. Review by the Construction Manager does not make Owner,

Architect or Construction Manager liable to Contractor for time or cost overruns flowing from such omissions or errors.

3.5 RECOVERY SCHEDULES

- A. Should the updated Construction Schedule, at any time during Contractor's performance, show, in the sole opinion of Construction Manager that any Contractor is ten (10) or more days behind schedule for any Completion Date, Contractor shall within seven (7) day's after notice by Construction Manager, prepare a recovery schedule at no cost to Owner explaining and displaying how Contractor intends to reschedule his Work in order to regain compliance with the Construction Schedule during the immediate subsequent pay period. Contractor shall also coordinate schedule changes for implementation by General Contractor in overall schedule.
1. If Contractor believes that all of the time can be recovered during the subsequent pay period, Contractor shall be permitted to prepare a recovery schedule as set forth below. However, if Contractor believes it shall take more than thirty (30) days to recover all of the lost time, he shall prepare and submit a request for revision to the Construction Schedule and comply with all of the requirements of a schedule revision as set forth.
 2. Contractor shall prepare and submit to the Construction Manager a limited duration recovery schedule, incorporating best available information from Subcontractors and others which shall permit return to Construction Schedule at the earliest possible time. Contractor shall prepare a recovery schedule to the same level of detail as the Construction Schedule for a maximum duration of one month. The recovery schedule shall be prepared in coordination with other Prime Contractors.
 3. Within two (2) days after submission by the Contractor or by any Prime Contractor of a recovery schedule to Project Coordinator, Contractor shall participate in a conference with the Project Coordinator and Construction Manager to review and evaluate the recovery schedule. Within two (2) days of the conference, Contractor shall submit the revisions necessitated by the review for Project Coordinator's and Construction Manager's review and acceptance. Contractor shall use the accepted recovery schedule as his plan for returning to the Construction Schedule.
 4. Each Contractor shall confer continuously with the Project Coordinator to assess the effectiveness of the recovery schedule. As a result of this conference:
 - a. If Construction Manager determines Contractor is still behind schedule, Project Coordinator shall direct Contractor to prepare a schedule revision with the assistance of the Project Coordinator and comply with all of the requirements of a schedule revision as stated herein and the other requirements of the Contract Documents; provided, however, that nothing herein shall limit in any way the rights and remedies of Owner and Project Coordinator as provided elsewhere in the Contract Documents; or
 - b. If Project Coordinator determines Contractor has successfully complied with provisions of the recovery schedule, Project Coordinator shall direct Contractor to return to the use of the accepted Construction Schedule.
 5. Nothing herein alters the obligation of Project Coordinator to resolve coordination and scheduling issues in dispute between and among Contractor and other Prime Contractors.

3.6 CAUSES FOR EXTENSIONS OF TIME

- A. The Contract Times will be adjusted only for causes specified in this Contract. In the event any Contractor requests an extension of Contract Time, he shall furnish justification and supporting evidence per requests specified elsewhere in these Contract Documents. Each Contractor acknowledges and agrees that actual delays in activities, which, according to the CPM schedule, do not affect any contract completion date shown by the critical path in the network, do not have any effect on the Contract Time, and therefore will not be the basis for a change in Contract Time.
- B. Contract Time extensions for weather delays will be based only on the following criteria.
 - 1. General Requirements: Even though a cause of delay meets any, or all, of the conditions stated herein, it shall in all cases be presumed that no extension, or further extension, of time is due unless Contractor shall demonstrate that the delay is justified and had an impact to the critical path of the updated CPM schedule for the delay period. To this end, Contractor shall maintain adequate records supporting any claim for an extension of time and shall submit such records, including a revised CPM schedule showing the impact of the delay, with the claim. Claims due to weather shall be submitted on a monthly basis and within five days after the end of the previous month of such delay.
 - 2. The Owner will determine Contractor's entitlement to an extension of the Contract Time. Daily records, maintained by the Construction Manager, shall be the official source for weather data related to precipitation and temperature. A time extension of no more than one day will be granted for one day of lost work, regardless of the number of allowable reasons for lost time. The period of any extension of time shall be only for the portion of the contract actually delayed due to the abnormal weather conditions. Any extension of Contract Time allowed shall be considered non-compensable and have no impact on Contract Price.
 - 3. Temperatures above or below the statistical mean are not considered to be justification for an extension of Contract Time.
 - 4. Time extensions for snow shall be based on above normal snow for the project area and only based on direct impact to the CPM schedule. Only snow days with greater than 3" of snow cover will be considered in the request for time extension.
 - 5. Time extensions for precipitation shall be based on above normal precipitation for the project area and only based on direct impact to CPM schedule. Only work days with precipitation greater than one-tenth inch (0.10") shall be considered in the request for time extension.

3.7 ADJUSTMENT BY OWNER

- A. From time to time it may be necessary for the Contract schedule and/or Contract Times to be adjusted by Owner due to the effects of job conditions, acts or omissions of other Contractors not directly associated with this contract, act of God, technical difficulties, unavoidable delays on the part of Owner or his representatives, and other unforeseeable conditions which may indicate schedule adjustments and/or an extension of the Contract Time. Under such conditions, Owner shall direct Contractor to reschedule the work to reflect the changed conditions, and Contractor shall revise his schedule accordingly. Only the Owner in writing shall grant schedule extensions affecting the Contract Time. No additional compensation shall be made to Contractor for such schedule changes except for unavoidable overall Contract delays, in which case Contractor shall take all

possible action to minimize any time extension. It is specifically noted that available Project Total or Free Float in the CPM schedule may be used by the Owner and his representative to accommodate any adjustments in time, therefore eliminating the need for a time extension.

3.8 FLOAT TIME

- A. Without obligation to extend the overall completion date or any intermediate completion dates set out in the CPM network, Owner may initiate changes to the Contract work that absorb float time. Owner-initiated changes that affect the critical path on the CPM network shall be the sole grounds for extending (or shortening) said completion dates. Contractor initiated changes that encroach on the total float time identified in the CPM network may be accomplished with Owner's concurrence. Such changes, however, shall give way to Owner-initiated changes competing for the same total float time.

END OF SECTION 01.3200

SECTION 01.3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.

- B. Related Requirements:

- 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
 - 3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 4. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
 - 5. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
 - 6. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 7. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 8. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

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

1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit in conformance with Section 013200 "Construction Progress Documentation".

1.5 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
1. Project name.
 2. Date.
 3. Name of Architect.
 4. Name of Contractor.
 5. Name of firm or entity that prepared submittal.
 6. Names of subcontractor, manufacturer, and supplier.
 7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
 8. Category and type of submittal.
 9. Submittal purpose and description.
 10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 11. Drawing number and detail references, as appropriate.
 12. Indication of full or partial submittal.
 13. Location(s) where product is to be installed, as appropriate.
 14. Other necessary identification.
 15. Remarks.
 16. Signature of transmitter.
- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Paper Submittals:
1. When specified, Contractor shall provide paper copies of submittals. Otherwise, all submittals shall be provided electronically.
 2. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
 3. Provide a space on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 4. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return one copy to Owner and one to Contractor.
 5. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies to Contractor.

6. Additional Copies: 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.
 7. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form.
- E. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number. Content of electronic submittals shall be identical to the content required for paper submittals.

1.6 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Email: Prepare submittals as PDF package, and transmit to Architect Construction Manager through Procore.
 2. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
 3. Paper: Where indicated in the specifications, prepare submittals in paper form, and deliver to Architect.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 5 days for review of each resubmittal.

- D. 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.
- E. 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.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.7 SUBMITTAL REQUIREMENTS

- A. 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 unsuitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.
- B. 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.
 - 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 Architect if specified.
2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

1.8 CONTRACTOR'S REVIEW

- A. **REVIEW EACH SUBMITTAL AND CHECK FOR COORDINATION WITH OTHER WORK OF THE CONTRACT AND COMPLIANCE WITH THE CONTRACT DOCUMENTS. NOTE CORRECTIONS AND FIELD DIMENSIONS. MARK WITH APPROVAL STAMP BEFORE SUBMITTING TO ARCHITECT.**
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp or indication in web-based Project software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

- A. **GENERAL: ARCHITECT WILL NOT REVIEW SUBMITTALS THAT DO NOT BEAR CONTRACTOR'S APPROVAL STAMP AND WILL RETURN THEM AT THE CONTRACTOR'S EXPENSE WITHOUT ACTION.** Architect will discard submittals received from sources other than Contractor.
- B. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.3300

SECTION 01.4000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- 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-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 quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Division 01 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 2. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.3 SUBMITTALS

- A. Qualification Data: 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.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and

system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

D. Reports: Prepare and submit certified written reports that 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. Ambient 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 re-inspecting.

E. 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.

1.4 QUALITY ASSURANCE

- A. 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.
- B. 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.

- C. 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.
- D. 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.
- E. Registered Engineer Qualifications: A registered 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 products that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications 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. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.
- G. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- H. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Fabricate and install test assemblies using installers who will perform the same tasks for Project.
 - d. When testing is complete, remove assemblies; do not reuse materials on Project.
 - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor and Construction Manager. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.5 QUALITY CONTROL

- A. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 72 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.
- B. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.
1. Testing agency will notify Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
 3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Testing agency will retest and reinspect corrected work at the expense of the Contractor.
- 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.
- D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 5. 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 quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.
 - 1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

- A. Recognized and/or licensed firms qualified to conduct the required testing.

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 Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
 - 2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."

- 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 01.4000

SECTION 01.4200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": The term "approved," when used to convey Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Architect, requested by Architect, and similar phrases.
- D. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": The term "install" describes operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer": An installer is the Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
- J. The term "experienced," when used with an entity, means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradesperson of the corresponding generic name.
- K. "Project site" is the space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Conflicting Requirements: 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 uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
 - 1. 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.
- D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.
- E. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.4200

SECTION 01.5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Sewers and drainage.
 - 2. Water service and distribution.
 - 3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
 - 4. Heating, ventilation and cooling facilities.
 - 5. Electric power service.
 - 6. Lighting.
 - 7. Telephone service.
- C. Support facilities include, but are not limited to, the following:
 - 1. Project identification and temporary signs.
 - 2. Waste disposal facilities.
 - 3. Field offices.
 - 4. Storage and fabrication sheds.
 - 5. Lifts and hoists.
 - 6. Construction aids and miscellaneous services and facilities.
 - 7. Dewatering facilities and drains.
 - 8. Snow removal of construction site.
 - 9. Weed trimming and grass cutting of construction site.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Environmental protection.
 - 2. Stormwater control.
 - 3. Tree and plant protection.
 - 4. Pest control.
 - 5. Site enclosure fence.
 - 6. Security enclosure and lockup.
 - 7. Barricades, warning signs, and lights.
 - 8. Temporary enclosures.
 - 9. Temporary partitions.
 - 10. Fire protection.
 - 11. Site security lighting.
- E. Related Sections include the following:
 - 1. Division 01 Section "Summary of Multiple Prime Contracts".

2. Division 01 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Division 01 Section "Execution Requirements" for progress cleaning requirements.
4. Division 01 Section 017419 "Construction Waste Management" for additional information and procedures.
5. Divisions 23 through 28 for temporary heat, ventilation, and humidity requirements for products in those Sections.
6. Division 32 Sections for construction and maintenance of asphalt paving and cement concrete pavement for temporary roads and paved areas.

1.2 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect and Construction Manager, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.3 DIVISION OF RESPONSIBILITIES

- A. General: Each prime Contractor is assigned specific responsibilities for certain temporary services and facilities used by other prime Contractors, and other entities at the site. The Contractor for General Construction is responsible for providing temporary services and facilities that are not normal construction activities of other prime Contractors and are not specifically assigned otherwise. All contractors must review this entire specification for temporary requirements in each contract.
- B. EACH PRIME CONTRACTOR is responsible for:
 1. Installation, operation, maintenance and removal of each temporary service or facility usually considered at its own normal construction activity, as well as the costs and use charges associated with each such service or facility.
 2. Plug-in electric power cords and extension cords, and supplementary plug-in task lighting and special lighting necessary exclusively for its own activities.
 3. Its own field office, complete with necessary furniture, utilities and telephone service.
 4. Its own storage and fabrication sheds.
 5. Heat, ventilation, humidity control and enclosure of the building where these utilities are necessary exclusively for its own activities.
 6. Temporary heat as required over the supplied 60 degree F.
 7. All hoisting requirements, including hoisting loads in excess of 2-ton, hoisting material or equipment into spaces below grade, and hoisting requirements outside the building enclosure.
 8. Collection and disposal of its own hazardous, dangerous, unsanitary or other harmful waste material.
 9. Secure lockup of its own tools, materials and equipment.
 10. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
 11. General hoisting facilities.
 12. Collection and disposal of fluid wastes, including any water containing effluents with or without solids until permanent sewer systems are functional and if permanent systems are equipped and/or permitted to accept such effluents.
 13. Separation and disposal of solids prior to release into permanent sewer system.

14. Contractor's responsibility is to perform regular clean up and place construction debris in designated container. Refer to Waste Disposal and Clean Up, Article 3.3.D.
 15. Contractor is responsible for management and disposal of all waste generated from all construction activities in accordance with the Construction Waste Management Plan.
 16. Regular cleanup of construction waste to keep a clean and safe construction site. Construction Manager will re-assign clean up to other contractors and charge the contractor who is not performing the regular cleanup.
 17. Each Prime Contractor shall coordinate its Construction Waste Management Plan (CWMP) and disposal requirements with the other contractors.
 18. Each Prime Contractor shall coordinate its CWMP and the implementation to improve the efficient use of the construction staging areas.
 19. Waste disposal support as per Article 3.3D.
- C. The Contractor for Site Construction is responsible for:
1. Temporary facilities and controls that are not otherwise specifically assigned to the General, Plumbing, Fire Protection, HVAC, and Electrical Construction Contract.
 2. Sediment and erosion control including assumption of Erosion and Sedimentation Pollution Control permit (NPDES) and responsibilities thereof. All work on the E&S Plans and PCSM plans.
 3. Maintenance of all erosion and sediment controls per the erosion and sediment drawings. The County Conservation District has final decision in all related E&S requirements and maintenance needs.
 4. Unpiped sewers and drainage, including drainage ditches, dry wells, stabilization ponds, and containers.
 5. Stormwater control.
 6. Temporary roads and paved areas.
 7. Dewatering facilities and drains.
 8. Excavation support and protection as required by OSHA, unless required solely for the Work of another contract.
 9. General hoisting facilities for materials and personnel, up to 2 tons.
 10. Barricades, warning signs, and lights.
 11. Site Security fence enclosure and lockup.
 12. Tree protection fence.
 13. Environmental protection.
- D. The Contractor for General Construction is responsible for:
1. Temporary facilities and controls that are not otherwise specifically assigned to the Plumbing Contract, Mechanical Contract and Electrical Contract.
 2. Stormwater control.
 3. Unpiped temporary toilet fixtures, wash facilities, and drinking water facilities, including disposable supplies.
 4. Furnishings for temporary job office located in the existing house that will act as Construction Manager's office. Provide plan tables, working tables, medical cabinet, fire extinguisher, and required job signage in compliance with all local, state, and federal job postings.
 5. Temporary offices for Owner's testing agents.
 6. Temporary toilets, including disposable supplies.
 7. Temporary wash facilities, including disposable supplies.
 8. Containerized bottled-water type drinking water units for the CM field office.

9. Temporary enclosure of the building.
 10. Temporary partitions.
 11. Temporary fire protection.
 12. Temporary heating, ventilation and air conditioning (HVAC), from the Notice to Proceed date to NINETY (90) days prior to scheduled Substantial Completion for each new construction building area only.
 13. Project identification and temporary signs.
 14. Rodent and pest control.
 15. Barricades, warning signs and lights.
 16. Site security.
 17. Temporary sidewalks and fencing.
 18. Security enclosure and lockup.
 19. Environmental protection.
 20. Temporary fire extinguishers/protection.
 21. Site temporary water service, water trucks, and site water systems until new water service is installed.
 22. Dewatering facilities and drains for all site and building areas until permanent systems are installed.
 23. Temporary stairs for construction worker access.
 24. Traffic controls.
 25. Facilities required to implement a Construction Waste Management Plan for the project in accordance with section 017419 for all contractors.
 26. Project identification, temporary signs and traffic controls.
 27. Control and coordination of fire watch activities.
 28. Protection of existing finishes to remain.
 29. Snow removal and clearing of construction site for work to continue uninterrupted.
 30. Weed trimming and grass cutting of site.
- E. The Plumbing Contractor is responsible for:
1. Piped temporary water service distribution from the new water service when it is within 5 feet of building.
 2. Temporary sewers and drainage.
 3. Dewatering facilities and drains for all work that is Plumbing Contractors responsibilities and once permanent construction is installed e.g. once permanent deck or waterproof decking is installed.
 4. Temporary fire hoses and signs.
 5. Security enclosure and lockup in coordination with the General Construction Prime Contractor.
 6. Piped storm water from roof sections as schedule dictates.
 7. Piped temporary toilet fixtures, wash facilities, and drinking water facilities.
 8. Plumbing connections to existing systems and temporary facilities and controls furnished by the General Construction Contract, Plumbing Contract, Mechanical Contract, and Electrical Contract.
- F. The Heating, Ventilating and Air-Conditioning (HVAC) Contractor is responsible for:
1. Temporary gas service for heating requirements of HVAC Contractor only.
 2. Permanent and/or temporary heating, ventilation and air conditioning (HVAC) from NINETY (90) days prior to Substantial Completion for each new construction building area.
 3. Security enclosure and lockup in coordination with General Prime Contractor.
 4. Dewatering and drainage for work under scope.
- G. The Electrical Contractor is responsible for:

1. Temporary electric power service and distribution. This includes office trailer (house) services and distribution for each of the Prime Contractors and the Construction Manager. Coordinate temporary service requirements with the Construction Manager and the Energy Company.
2. Temporary lighting for building and site and temporary outlets during construction.
3. Power lines and outlets for temporary electric water coolers.
4. Connections for illuminated signs.
5. Temporary telephone and fax lines and service to CM trailer.
6. Data and Telecommunications conduit and wiring and service to CM trailer (house)
7. Security enclosure and lockup in coordination with the General Prime Contractor.
8. Dewatering and drainage for work under scope.
9. Electrical connections to existing systems and temporary facilities and controls furnished by the General Construction Contract, Plumbing Contract, Mechanical Contract and Electrical Contract.

1.4 USE CHARGES AND OUTLINE REQUIREMENTS

- A. General: Cost or use charges for temporary facilities are not chargeable to Owner, Construction Manager or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
 1. Owner's construction forces.
 2. Occupants of Project.
 3. Architect and Construction Manager (CM).
 4. Testing agencies.
 5. Personnel of authorities having jurisdiction.
- B. Water Service: Existing Well will be available for use during Construction. Well water not suitable as drinking water. from Notice to Proceed and until new permanent water service is installed and metered to building site. Owner will pay for metered use charges for the Project once the permanent system is installed, tested and accepted by Water Authority.
- C. Sewer Service: Each individual Contractor shall be responsible for collecting and disposing of any water containing solids or other effluents with or without solids that are to be disposed of as a function of their work until the permanent septic or sewer system is fully functional and operational. Any effluents not permitted to be discharged into sewer or septic system shall be collected and disposed of by each Contractor responsible for generating the discharge.
- D. Electric Service: Electrical Contractor shall furnish and install temporary power service for construction activities. Owner shall pay for all metered use charges from temporary service. Once permanent service is active, Owner will pay for use charges for permanent service.
- E. HVAC System:
 1. General Contractor shall provide temporary HVAC systems and pay for all HVAC costs in new construction areas until NINETY (90) days before Substantial Completion. After that time, the HVAC Contractor is responsible for providing and operating the permanent HVAC system or any temporary HVAC system required. Utility costs for permanent HVAC system use will be paid by Owner. Utility costs for temporary HVAC system shall be paid by the Contractor.
 2. Owner will not be responsible for any costs for servicing, maintaining or operating temporary or permanent systems until after substantial completion of each phase.

3. HVAC Contractor must maintain, operate and extend equipment warranties as required to provide the Owner with a new clean system with all warranty periods in effect as required by the Contract Documents.
4. HVAC Contractor shall provide a filter change after the date of substantial completion.

F. Clarification of Utility Use Charges:

1. The Owner will pay for utility company metered electrical usage for construction activities.
2. Each Prime Contractor shall pay for their communication usage.

1.5 SUBMITTALS

- A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

1.6 QUALITY ASSURANCE

- A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
 2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS AND OPERATION

- A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.
1. Temporary Use of Permanent Facilities: Installer of each permanent system and service shall assume responsibility for operation, maintenance, and protection of each permanent system and service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
1. Keep temporary services and facilities clean and neat.
 2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Undamaged, previously used materials in serviceable condition may be used if approved by Construction Manager. Provide materials suitable for use intended.
- B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm) 11-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with movable supported ballast systems. At select locations where approved by CM provide driven posts.
- C. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- D. Water: Potable.
- E. Pavement and Concrete: Comply with Division 03 and 32 Sections.
- F. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry".
- G. Roofing: Standard-weight, mineral-surfaced, asphalt shingles or asphalt-impregnated and -coated, mineral-surfaced, roll-roofing sheet.
- H. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.
- I. Paint: Comply with requirements in Division 09 Section "Painting".

2.2 EQUIPMENT

- A. General: Provide equipment suitable for use intended.
- B. Field Offices: Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air-conditioned; on foundations adequate for normal loading. Also see Article 3.3F in this Section.
- C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
 - 2. Extinguisher shall have a valid inspection tag.
- D. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- E. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units with both hot and cold water, including paper cup supply.
- F. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

- G. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.
- H. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.
- I. Temporary Dehumidifying Equipment: Provide system engineered by temporary equipment supplier for expected conditions and interior environment requirements specified. Provide self-contained, recirculating refrigeration units with water collection and filtration capabilities.
 - 1. Equipment shall be sized with sufficient moisture extraction capabilities to maintain ambient interior air within specified relative humidity range.
 - 2. Cooling Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.
 - 3. Provide generators sized to power equipment where temporary electric service is of insufficient capacity.
 - 4. Provide collection and/or drainage capabilities to prevent condensate from re-evaporating in conditioned space or from spilling on floors.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION AND REQUIREMENTS

- A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
 - 3. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.
- B. Sewers and Drainage by Site Contractor: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be

lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
2. Connect temporary sewers to municipal system as directed by sewer department officials.
3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.

- C. General Contractor is responsible for all water needs on project using water trucks until new water service is available at the building. After that time, Plumbing Contractor shall provide the following:

Water Service by Plumbing Contractor: Use of Owner's new water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

1. Provide rubber hoses as necessary to serve Project site.
2. As soon as water is required at each level, extend service to form a temporary water- and fire-protection standpipe. Provide distribution piping. Space outlets so water can be reached with a 100-foot (30-m) hose. Provide one hose at each outlet.
3. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
4. Provide a minimum of 30-psi (200-kPa) static pressure at highest point.

- D. Sanitary Facilities and Drinking Water by General Contractor: Provide temporary toilets, hand/wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Drinking Water: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use.
2. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
3. Toilets: Use of Owner's existing toilet facilities will not be permitted. Install self-contained toilet units. Shield toilets to ensure privacy. Provide a minimum of 6 units for the entire construction period.
4. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
5. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.

- E. Chain Link Fence: The Site Contractor shall provide temporary galvanized chain link fence, 6'-0" high, 11 gauge wire in a 2" mesh with top and bottom selvages knuckled. The General Contractor shall secure the site and furnish gates as shown on phasing plan or as required for project and directed by Construction Manager. The fencing and gates shall be relocated and adjusted during the project as required.

- F. Temporary HVAC: The General Contractor shall provide temporary HVAC required by construction activities, for curing or drying of completed installations, or protection of installed construction from adverse effects of low temperatures or high humidity from Notice to Proceed to NINETY (90) days prior to substantial completion for each new building area only. Temporary HVAC shall also be provided in all new building areas scheduled for work in order to maintain productivity of all trade contractors and personnel. Comply with the following:
1. Select safe equipment that will not have a harmful effect on completed installations or elements being installed.
 2. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
 3. Maintain the temporary heat to a minimum of 60 degrees F.
 4. The General Contractor shall provide all other Prime Contractors with the Project Schedule and the minimum heating requirements to protect the Work as scheduled. If through no fault of any other Prime Contractor, the General Contractor does not maintain the original approved schedule, the General Contractor shall continue to provide temporary heat to other Prime Contractors when required.
 5. The General Contractor shall not be responsible for providing temporary heat in permanently unconditioned areas or in areas not scheduled for work, unless the approved schedule is modified and accepted by the Owner and all Prime Contractors.
 6. Prime Contractors are responsible to protect their work in unconditioned or unscheduled work areas at no additional expense to the Owner.
 7. Prior to the permanent heating system being operational, and when necessary for the proper prosecution of the work, the General Contractor shall provide, maintain, operate and pay all cost including fuel for sufficient approved heat.
- G. Temporary/Existing/Permanent HVAC: The HVAC contractor shall provide HVAC from NINETY (90) days prior to Substantial Completion of each new building area under construction and shall comply with the following:
1. When noted above, the HVAC contractor shall provide, maintain and operate sufficient temporary heating/cooling. If the new permanent heating or cooling system is used during this period, the HVAC contractor shall professionally clean all HVAC systems.
 2. The HVAC Contractor shall properly protect all HVAC equipment / systems from construction air dust and debris beginning from initial installation.
 3. Select safe equipment that will not have a harmful effect on completed installations or elements being installed.
 4. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
 5. Maintain the temporary heat to a minimum of 60 degrees F for construction areas and at 70 degrees F for all occupied areas.
 6. At NINETY (90) days prior to substantial completion of new building area and at all times for existing building areas, the Owner shall pay for fuel and electric energy used to operate the temporary or permanent heating or cooling and exhaust system provided that due care is exercised to avoid excessive use of fuel.
 7. Portable heaters will not be acceptable during final finishing operations.
 8. The new permanent heating and exhaust system or any portion thereof may be used by the HVAC Contractor to provide temporary heat and exhaust as required for the proper prosecution of the work only when outside air is supplied directly to the burners. The HVAC Contractor shall, when

operating the permanent system do all servicing and adjusting to maintain the system in proper running order to prevent damage to the building or its equipment during the construction period. Units placed in permanent operation must be fully controlled using the final control system operational sequence.

9. When the HVAC Contractor performs startup and begins using the permanent HVAC systems, the Contractor must provide pre-filters, return air filters, plenum filters and or other modifications to the systems necessary to prevent dirt, dust and other contaminants from entering the system. If measures implemented do not prevent dust from entering the systems, the HVAC Contractor shall perform cleaning of duct, coil and other HVAC components necessary to provide clean HVAC systems at Substantial Completion of the Project.
10. Prior to turning over the new permanent heating and ventilating system to the Owner, the HVAC Contractor shall thoroughly clean the system, provide new filters, make re-adjustments as required and bear all cost to place the system in first class operating condition. The warranty period of individual pieces of equipment of the permanent system used during the construction period shall be extended during the temporary use period and the starting date used for determination of expiration for such warranties shall begin upon final acceptance of the project by the Owner.
11. Work which is damaged as a result of improper or insufficient climate control shall be removed and replaced

H. Ventilation and Humidity Control by General Contractor:

1. Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
2. Temporary Humidity Control:
 - a. General: Where control of ambient humidity is required for proper performance of the work, or for curing/drying of installed work, or for protection of installed work from deterioration due to variations in ambient conditions and/or adverse effects of high humidity, the Contractor shall provide temporary humidification or dehumidification equipment to maintain the required conditions. This equipment may require air conditioning to achieve the desired results and maintain the project schedule. Determination of the required equipment is the responsibility of the Contractor. Coordinate the use of the equipment with temporary heating to produce the required conditions with a minimum overall use of energy.
 - b. Construction Dehumidification (ongoing): The Contractor shall provide portable dehumidification units for use during construction. Units shall be provided as required to maintain optimal building moisture conditions required for the proper performance of the Work. Moisture levels shall be maintained throughout both occupied and unoccupied areas of the facilities.
 - c. Units shall be refrigeration-based and shall include standard 115V power cord, humidistat, integral condensate pump, wheels and handle. Units shall be as manufactured by Ebac or approved equal. Dehumidifier capacities and quantities shall be as follows:
 - i. Quantity 15 - Minimum 25 gallons/day capacity (Ebac BD150CR or equal).
 - ii. Locations shall be as agreed upon in the field with the Architect and Construction Manager.
 - d. Contractor shall furnish and install drainage hoses and connections to discharge condensate to exterior of building at locations acceptable to the Construction Manager and Architect.
 - e. The Electrical Contractor shall be responsible to distribute power sources throughout each area of the building dedicated for the purpose of power for these dehumidification units. This power shall be in addition to power required by the trades for performance of their Work.

- I. Electric Power Service by Electrical Contractor: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, and automatic ground-fault interrupters.
 1. Install power distribution wiring overhead or underground and rise vertically where least exposed to damage.
 2. Electric power service including all necessary poles and accessories shall be extended from off-site available sources after coordination with local electric utility company.
 3. Provide adequate temporary electric service and for the following temporary field offices for light, power, heating and cooling located on the site:
 - 1 – Site Contractor
 - 1 - General Contractor
 - 1 – Construction Manager
 - 1 – Testing Agencies of Owner
 - 1 – HVAC Contractor
 - 1 – Plumbing Contractor
 - 1 – Electrical Contractor
 4. Provide or extend the following temporary construction electric services to the various building areas within forty (40) days of notice to proceed unless noted otherwise:
 - i. 120/208-volt three phase, four-wire wye with a solid neutral service.
 - ii. Transformation and power distribution as shown as required for temporary needs specified unless noted otherwise on drawings.
 - iii. Power receptacles distributed across the building as the project develops. Minimum requirements for each building as follows:
 - Ten (10) 120-volt receptacles
 - Two (2) 240-volt receptacles
 - iv. Temporary power for trailers and construction area.
 - v. Ten (10) temporary connections to HVAC temporary heating units when directed by CM.
 - vi. Ten (10) site lights when directed by CM (see Article L below).
 5. All extensions from the temporary power receptacles shall be provided by the parties requiring power.
- J. Electric Power Service: Use of Owner's electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
- K. Electric Distribution by Electrical Contractor: Provide receptacle outlets adequate for connection of power tools and equipment in new and existing building areas.
 1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
 2. Provide warning signs at power outlets other than 110 to 120 V.
 3. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.

4. Provide metal conduit enclosures or boxes for wiring devices.
 5. Provide 4-gang outlets, spaced so 100-foot (30-m) extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.
 6. At earliest feasible time, but no later than 60 days prior to Substantial Completion of each phase provide permanent electric distribution systems.
- L. Lighting by Electrical Contractor: Provide and maintain temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions. Wherever overhead floor or roof deck has been installed, the Electrical Contractor shall provide temporary lighting with local switching.
1. For New Construction:
 - i. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - ii. Provide one 100-W incandescent lamp per 500 sq. ft. (45 sq. m), uniformly distributed, for general lighting, or equivalent illumination.
 - iii. Provide one 100-W incandescent lamp every 50 feet (15 m) in traffic areas.
 - iv. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
 - v. Install exterior-yard site lighting that will provide adequate illumination for construction operations, security, traffic conditions, and signage visibility when the Work is being performed.
 - vi. Provide thirty (30) pole mounted (20 ft. high, 200 watt) temporary security lights controlled by a photo cell to be installed as directed by CM.
 - vii. At earliest feasible time, but no later than 60 days prior to Substantial Completion of each phase provide permanent lighting systems both inside the building and on the site for use in completing construction and lighting the project site. Contractor must operate, maintain and protect the permanent systems through final completion of the project and provide full project warranty from the contract completion date of the project.

3.3 SUPPORT FACILITIES AND INSTALLATION

- A. General: Comply with the following:
1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
 2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines. Comply with NFPA 241.
 3. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will not be permitted to use permanent facilities.
- B. Temporary Roads and Paved Areas by Site Contractor : Construct and maintain temporary roads and paved areas adequate to support loads and to withstand exposure to traffic during construction period. Locate temporary roads and paved areas in same location as permanent roads and paved areas. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 31 Section "Earthwork".
 3. Recondition base after temporary use, including removing contaminated material, regarding, proof rolling, compacting, and testing.
 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 32 Section "Hot-Mix Asphalt Paving".
 5. Provide dust-control treatment that is non-polluting and non-tracking. Re-apply treatment as required to minimize dust.
 6. Cooperate with Work by others on the adjoining property construction.
- C. Dewatering Facilities and Drains: Comply with requirements in applicable Division 31 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities by General Contractor.
 2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed by Plumbing Contractor.
 3. Contractor installing drains and any pipes for storm or sanitary systems shall verify that all systems are clear of debris prior to substantial completion. If necessary, flush all systems.
 4. Remove snow and ice as required to minimize accumulations by General Contractor.
 5. Remove water from trenches, excavations or other work of each contract by individual Contractors.
- D. Waste Disposal Facilities and Cleanup: Each Prime Contractor will provide waste-collection containers in sizes adequate to handle regular waste generated from construction operations. Each Prime Contractor is responsible for collecting, and disposing of, their respective construction waste generated from building construction, demolition and site work operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste and dispose of this waste.
1. Contractor shall perform waste collection and disposal on a daily basis for all site and building areas in full compliance with the waste management plan.
 2. Contractor shall clean up all work areas on a daily basis. This includes site and building areas. Contractor shall also segregate materials and place them in designated containers.
 3. General Contractor shall be responsible for daily cleanup of all areas of the building unless noted otherwise below. HVAC contractor shall be responsible for daily cleanup of all mechanical rooms. Electrical Contractor is responsible for daily clean up of all electrical rooms and closets. All contractors shall be responsible for daily cleanup of the areas in which they are working.
 4. Owner, after consultation with the Construction Manager, shall deduct \$200.00 per day from each contractor that is not performing the required daily cleanup. The total amount will be deducted from the contractor's contract amount. Construction Manager will re-assign cleanup or hire independent contractor to perform cleanup. Construction Manager may also withhold processing of payment request until cleanup duties are resumed to Construction Manager's satisfaction.
 5. Each Contractor is responsible for removal of their respective waste from building demolition and sitework demolition and new site and shall follow procedures to direct as much waste as possible from the landfill.

6. Each Contractor shall coordinate the locations of the waste containers with the other contractors and the phasing plan. All locations to be confirmed with the Construction Manager prior to placement.
 7. Each Contractor shall comply with Construction Waste Management requirements.
- E. Janitorial Services by General Contractor: Provide janitorial services on a weekly basis for Construction Manager's temporary offices, first-aid stations and toilets.
- F. Field Offices:
1. Each Prime Contractor shall provide an insulated, weathertight temporary office of sufficient size to accommodate required office personnel at the Project site. Wood clad exteriors shall not be permitted.
 2. Field Office for Construction Manager: The field office will be located in the existing house. The General Contractor shall modify facilities as required. Furnish facility prior to start of work. Provide all utilities to service facility, including electric service, lighting, and facilities for telephone service.
 - i. Field office for Owner's testing agents: Testing personnel will share Construction Manager's trailer provided by General Contractor.
- G. Temporary Stairs by General Contractor: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.
1. Provide protective coverings, barriers, devices, signs or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.
- H. Traffic Controls by Site Contractor: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Provide construction site signage on adjacent roads and site to direct public and construction traffic (both vehicular and pedestrian), comply with CM and Owner's request for all site and road signage. Comply with requirements of authorities having jurisdiction.
- I. Project Identification and Temporary Signs by General Contractor:
1. Prepare and install 4' x 8' Project identification sign as indicated on the drawings or directed by Construction Manager and Architect. Do not permit installation of unauthorized signs.
 2. Prepare and install up to 18 signs 4' x 3' with information to direct and control traffic on site and in building. Apply graphics and text as directed by Construction Manager. Install where directed.
 3. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details provided by the Architect.
 4. Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.
 5. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.
- J. The General Contractor shall be responsible for snow removal and clearing of the site to provide access to all construction work areas, construction parking, and staging areas at all times.

- K. The General Contractor shall be responsible for trimming and clearing of all weeds and grass cutting in the construction site to maintain a clean organized site at all times.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION - BY GENERAL CONTRACTOR

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.
- B. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
- C. Site Security: Ensure all windows, doors and gates are closed and secured at the conclusion of each day in scheduled work areas.
- D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
 3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
 5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire-retardant-treated material for framing and main sheathing.
 6. Provide temporary enclosures as required to meet criteria for permanent enclosure no later than the beginning of any of the following Work:
 - i. Spray fireproofing.
 - ii. Interior finishes, including gypsum wallboard finishing, painting and wall coverings.
 - iii. Architectural woodwork.
 - iv. Institutional casework.
 7. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - i. Install temporary enclosures before time frames stated above when necessary to maintain interior relative humidity levels and temperatures as required to promote drying of concrete and concrete masonry substrates so that they achieve low enough moisture content and vapor emission levels to permit timely installation of finishes.
 8. Vertical openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
 9. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 10. Install tarpaulins securely using fire-retardant treated wood framing and other materials.
 11. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire-retardant-treated material for framing and main sheathing.

- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
 - 1. Construction dustproof partitions of not less than nominal 4-inch studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch fire retardant plywood on construction side.
 - 2. Construct dustproof, floor-to-ceiling partitions of not less than nominal 4-inch studs, 2 layers of 3-mil polyethylene sheets, inside and outside temporary enclosure. Cover floor with 2 layers of 3-mil polyethylene sheets, extending sheets 18 inches up the side walls. Overlap and tape full length of joints. Cover floor with 3/4-inch fire-retardant plywood.
 - 3. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
 - 4. Protect air-handling equipment.
 - 5. Weatherstrip openings.
- F. Exterior Surface Protection:
 - 1. Where sequence of operations expose exterior finished materials including, but not limited to factory finished metal, anodized metal, glass and the like, to mortars, grouts, alkalis, acids, strong detergents or other materials that may cause damage to adjacent finishes, provide surface protection materials completely over surface to be protected.
 - 2. Comply with surface protection material manufacturer's recommendations. Do not leave materials in place beyond maximum time limit.
 - 3. Remove protection materials completely when at-risk work is complete.
- G. Traffic Surface Protection:
 - 1. New Finished Traffic Surfaces: From the time of installation to just before inspection for substantial completion overlay traffic surfaces with traffic protection products as recommended by manufacturer for substrates to be protected. Replace traffic protection products when damaged. Where specified products do not meet construction traffic demands or when required by Architect or Construction Manager, provide more substantial protection as specified below for existing traffic surfaces to remain.
 - 2. Existing Finished Traffic Surfaces to Remain: From the time of one week before the commencement of any work of a phase of any prime contractor in area or areas immediately adjacent to floors to be protected, overlay traffic surfaces with one layer of craft paper and follow with one layer of plywood. Secure plywood with heavy adhesive tape. Maintain protection for duration of work in area and remove just before inspection for substantial completion.
- H. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
 - 2. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 3. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
 5. Prohibit smoking in construction areas.
 6. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 7. Develop and supervise an overall fire-prevention and –protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 8. Coordinate activities with Fire Watch. Notify Fire Watch of hours of operation and planned fire-risk activities such as welding within new or existing construction.
- I. Fire Watch: Provide adequate number of and properly trained personnel to provide fire watch in accordance with NFPA 51B “Standard for Fire Protection During Welding, Cutting and Other Hot Work 1999 Edition, NFPA 101 “Life Safety Code”, Articles 9.6.1.8 and 9.7.6.1 (including appendix) and as follows:
1. Fire Watch personnel shall be trained and provide services in compliance with NFPA 601 “Standard for Security Services in Fire Loss Prevention” and shall be acceptable to the Authorities Having Jurisdiction.
 2. The responsible party for Fire Watch Services as defined in Division 01 Section “Multiple Contracts Summary” shall be considered “Management” for the purposes of complying with the referenced standards.
 3. Fire Watch personnel shall be provided with portable communications to permit immediate communication with school authorities, contractors and public emergency services.
 4. Conduct a coordination meeting in advance of the earliest requirement for Fire Watch with the Owner, respective Project Coordinators, Authority Having Jurisdiction and Architect.
 - i. Develop an emergency response plan for risks associated with construction. Coordinate with Owner’s existing security and emergency response plan.
 - ii. Establish the lines of and order of communications based on each anticipated risk type.
 - iii. Project Coordinators shall record and transmit minutes of the meeting to attendees and to Fire Watch personnel.
 5. Fire Watch shall be provided at the Work by respective responsible entity as defined in Division 01 Section “Multiple Contract Summary” and at the following times during school days (based on School Board approved calendar) from 7:00 a.m. to 2:30 p.m.:
 - i. When hot work is being conducted.
 - ii. When fire alarm is not in operation in occupied areas for time greater than 4 hours.
 - iii. When fire suppression system is not in operation in occupied areas for time greater than 4 hours.
 6. For the entire duration of time from the blocking of existing stair towers.
 7. For the entire duration of time from the disturbance of the egress route.
- N. Fire Extinguishers: Class A stored-pressure water-type extinguishers. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
1. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
 4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
- O. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection in facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION - BY SITE CONTRACTOR

- A. Stormwater Control: Provide silt barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.
- B. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.
- C. Site Enclosure Fence by Site Contractor: Before construction operations begin, install portable 6 ft. high chain-link enclosure fence with lockable entrance gates. Locate where indicated, or enclose entire Project site or portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.
1. Set fence posts below grade a minimum of 3 feet.
 2. Provide gate in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.
 3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide CM and Owner with one set of keys.
 4. Provide plywood on fencing adjacent to existing windows and doors.
- D. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.
1. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch thick exterior plywood.
 2. Where indicated on phasing plan provide concrete 'Jersey' barriers.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Temporary Facility Changeover for Security and Protection: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- E. Termination, Removal and Temporary Facility Changeover: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs. Individual contractor signs will not be permitted.
 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section "Closeout Procedures."
 4. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
 5. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

3.7 NO SMOKING

Smoking will not be permitted on the entire site.

3.8 IDENTIFICATION OR SIGNS

Only one project sign will be permitted for the site, provided by the General Contractor and listing all contractors. Individual contractor signs will not be permitted.

3.9 COMPLIANCE WITH TEMPORARY FACILITIES AND CONTROLS

If contractor does not comply with any of the requirements of this section CM reserves the right to recommend that the Owner withhold adequate funds from payment applications to pay for completing the work.

END OF SECTION 01.5000

SECTION 01.5526 – TRAFFIC CONTROL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. The Work of this Section includes:
 - 1. The safe and efficient movement of traffic must be maintained in the vicinity of construction by the Contractor.

1.3 TRAFFIC CONTROL PLAN

- A. Traffic control plan shall comply with PennDOT Publication 203 Work Zone Traffic Control and the traffic control requirements of the Township.
- B. Contractor shall implement a Traffic Control Plan as approved by all authorities having jurisdiction on the work along with any related conditions imposed by permits relative to work in or along the highways adjoining the property.
- C. Contractor shall implement any Traffic Control Plan requirements imposed by any Road Opening Permit issued by the respective City and/or Penn DOT relative to work in or along roads.
- D. Contractor will be required to furnish, erect, and maintain traffic cones, drums, barricades, flashing danger signal lights, directional signs and provide trained and equipped flagmen as required by the Traffic Control Plan and local and state permit requirements to restrict the movement of traffic within the construction areas and to clearly indicate the restrictions well in advance to vehicular traffic.
- E. Contractor shall consult with authority having jurisdiction in establishing public thoroughfares to be used for haul routes and public access.

1.4 NOTIFICATIONS

- A. Contractor shall provide advance notification to any parties so noted in the Municipal's Road Opening Permit in accordance with the required time schedule. In any event, the Municipal Police Department and Public Works Department shall be notified at least ten (10) days prior to the date Contractor desires to restrict traffic in or along any roads.
- B. Contractor shall obtain advance approval from the Authority having jurisdiction should it be necessary to temporarily close a road. The following parties shall be notified at least twenty-four (24) hours in advance.
 - 1. Local Police.

2. Department of Public Works.
 3. Local Fire Company.
 4. Owner.
 5. Local Ambulance Service.
 6. All affected residents.
 7. PennDOT (if applicable).
- C. At least one lane must be open for traffic during non-working periods and the Contractor must be prepared to allow passage of emergency vehicles at any time.

1.5 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with access by emergency vehicles, neighboring properties, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.

1.6 OTHER REQUIREMENTS

- A. Access must be maintained at all times during non-working periods and to the maximum extent feasible during working periods to all driveways and entrances of adjacent properties. In this regard, the construction and maintenance of steel plates or other decking across the trench may be necessary to reduce to a minimum interference with access to the adjacent properties.
- B. Open trenches shall be safely decked during non-work periods by the use and maintenance of steel plates or other decking, which shall have sufficient strength to safely support all traffic including truck loads.
- C. When construction work, including repaving, has been completed, the temporary measures of the Traffic Control Plan shall be removed, any damage caused by installation of the temporary measures shall be repaired, and traffic shall be restored to its former condition.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.5526

SECTION 01.6000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include the following:
 - 1. Division 01 Section "References" for applicable industry standards for products specified.
 - 2. Division 01 Section "Closeout Procedures" for submitting warranties for contract closeout.
 - 3. Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.2 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through substitution process, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Bidder.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
- D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, to extend time limit provided either by manufacturer's warranty or to provide more rights for Owner.

1.3 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 3. Initial Submittal: Within 30 days after date of commencement of the Work, submit [2] copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
 4. Completed List: Within 60 days after date of commencement of the Work, submit [3] copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 5. Architect's Action: Architect will respond in writing to Contractor within 15 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.
- B. Pre-bid Substitution Requests: Submit one copy of each Pre-bid Substitution Request not later than 10 days prior to receipt of Bids for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Refer to Specification Section 002625, Substitution Request Form.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.

- f. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Bidder's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Addendum.
 - b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated from the information provided it will be rejected.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
 - 1. Each Contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect and Owner will determine which products shall be used.
 - 3. The material selected by the Architect shall be provided at no additional cost to the Owner.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions. Deliveries addressed to the project, in general, the Owner, Architect/Engineer, or Construction Manager, will be refused and returned to shipper.

1. Notify Construction Manager and Owner 48 hours in advance of major deliveries.
 2. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 3. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 4. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 5. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 6. Store products to allow for inspection and measurement of quantity or counting of units.
 7. Store materials in a manner that will not endanger Project structure.
 8. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 9. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 10. Protect stored products from damage.
- B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
 7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures: Procedures for product selection include the following:
1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.
 2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.
 3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that comply with requirements.
 4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
 5. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
 6. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
 7. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by another manufacturer. Comply with provisions in "Product Substitutions" Article.
 8. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product[s]" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
 9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's

sample. Architect's and Owner's decision will be final on whether a proposed product matches satisfactorily.

- a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.
10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
- a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect and Owner will select color, pattern, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect and Owner will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COLOR SELECTION

A. Pre-Selected Colors:

1. Where colors have been specifically identified in the Contract Documents, the products provided by the Contractor shall match the selected color to the satisfaction of the Architect or the product will be rejected as non-conforming materials.
2. Manufacturers listed in the specification sections are capable of manufacturing the product specified but may not manufacture the specific selected color identified in the Contract Documents as part of their running line.

B. If additional up-charges are associated with providing the colors identified in the Contract Documents, the Contractor shall be responsible for all such costs and no additional cost to the Owner above the Contract Sum will be considered.

C. Colors Selected During Construction:

1. Products will be selected by the Architect from the standard colors of any of the listed or approved manufacturers, unless a specific color or color price range has been identified prior to bidding.

D. Location of Selected Colors: In general, preselected colors are identified in the following locations:

1. Exposed Interior Finishes: Room Finish Schedule - Color Legend.
2. Other Materials: Individual Specification Sections or notes to the Drawings.

2.3 SUBSTITUTIONS AFTER EXECUTION OF THE AGREEMENT

A. Substitution of Materials: No substitutions of materials will be considered after the Execution of the Contract without a Credit to the Owner, unless a Product becomes unavailable through no fault of the Contractor.

- B. NO ACTION TO REVIEW THE PROPOSED SUBSTITUTION WILL BE TAKEN BY THE ARCHITECT OR ENGINEER UNTIL THE CONTRACTOR HAS SUBMITTED THE FOLLOWING:
 - 1. A letter itemizing the proposed credit to Owner.
 - 2. A copy of the warranty.
 - 3. A summary of the schedule impact.
 - 4. Properly executed Document 002625, Substitution Request Form.
- C. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request as included above, or when acceptance will require revision to the Contract Documents.
- D. In submitting a substitution request the Contractor acknowledges that:
 - 1. The Contractor shall coordinate installation of the substitution including modifications to other Work.
 - 2. The use of this Substitution will not adversely affect the Project Schedule.
 - 3. If modifications to the work of this contract or another contract are required because of the substitution these modifications shall be made at no additional cost to Owner.
 - 4. The Contractor waives all rights to claims for additional costs or time extension which may subsequently become apparent.

2.4 COMPARABLE PRODUCTS

- A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:
 - 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents, and will produce the indicated results, and that it is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and owners, if requested.
 - 5. Samples, if requested.

2.5 USE OF NON-HAZARDOUS MATERIALS:

- A. Materials used in this Project shall have no detectable levels of the following hazardous materials.
 - 1. Asbestos of any form or type.
 - 2. Lead in water supply line solder.
 - 3. Lead in paint coatings and finishes.
 - 4. Polychlorinated Biphenyls (PCBs).

- B. Upon substantial completion, the Contractor shall submit, on its company letterhead, a signed statement certifying that the products supplied under its Contract had no detectable levels of the hazardous materials listed above in Paragraph 2.5.A. Final payment will not become due until five (5) copies of this letter are submitted (one each for the CM and Architect's files and three for Owner).

PART 3 - EXECUTION (Not Used)

END OF SECTION 01.6000

SECTION 01.7300 – EXECUTION

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. General installation of products.
 - 3. Progress cleaning.
 - 4. Starting and adjusting.
 - 5. Protection of installed construction.
 - 6. Correction of the Work.
- B. Related Sections include the following:
 - 1. Division 01 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 2. Division 01 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
 - 3. Division 01 Section "Closeout Procedures".

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 - 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 5. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 6. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - i. Notify Owner not less than 30 days in advance of proposed utility interruptions.
 - ii. Do not proceed with utility interruptions without Owner's written permission.
 - iii. All utility interruptions shall be scheduled for weekends or holidays.
- C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
 - 1. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 2. Inform installers of lines and levels to which they must comply.
 - 3. Check the location, level and plumb, of every major element as the Work progresses.
 - 4. Notify Architect when deviations from required lines and levels exceed allowable tolerances.

3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels exceeding 80 dbA.
- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
- G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 PROGRESS CLEANING

- A. Each prime contractor is responsible to comply with progress cleaning. The General Contractor shall be responsible for overall progress cleaning. If in the opinion of the Owner or Architect, any contractor fails to comply with progress cleaning, and upon written request by the Owner or Architect to the affected contractor, the Architect shall prepare a deduct change order. The Owner also reserves the right to perform progress cleaning and deduct the cost from the contractor or contractors responsible. If

multiple contractors are at fault, the costs may be apportioned solely in the judgment of the Architect. The amount deducted shall be a minimum of \$200.00 per day. Architect may also withhold processing of contractor's payment until cleanup duties are resumed to satisfaction.

- B. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- C. Site: Maintain Project site free of waste materials and debris.
- D. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- E. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- F. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- G. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- H. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
 - 1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- I. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- J. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- K. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

- L. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. When finished work is installed, such as, but not limited to, flooring materials, toilet fixtures, roofing, doors, casework, countertops, finished wall surfaces or other materials that can be damaged during construction, provide appropriate protection immediately after installation to prevent damage.
- B. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.
- D. Contractors shall not use finished materials and surfaces as ladders, platforms or storage shelves. Tools and toolboxes shall not be placed on finished surfaces without adequate protection.
- E. Architect can deduct \$200.00 per day from any contractor not properly protecting their finished work or from any contractor working on, above or adjacent to finished work and not properly protecting such work.

3.8 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 01.7300

SECTION 01.7329 – CUTTING AND PATCHING

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Requirements and limitations for cutting and patching of Work.
 - 1. A Contractor, subcontractor, or sub-subcontractor requiring the cutting of openings in new work installed by others, shall have such openings cut and patched by the trade which installed the work and such cutting and patching shall be at the expense of the Contractor, subcontractor or sub-subcontractor requiring the opening.
 - 2. A Contractor, subcontractor, or sub-subcontractor requiring the cutting of openings or patching of existing materials shall be performed by a sub-contractor with experience in cutting and patching of material being modified and shall be at the expense of the Contractor, subcontractor or sub-subcontractor requiring the opening.
 - 3. Approval to do such cutting and patching shall be received from the Architect prior to proceeding with the work and shall include installation of such reinforcement of the work as the Architect may direct.
 - 4. All blocking, bracing, reinforcement, or structural enhancement required due to cutting and patching shall be provided at no additional cost to Owner. All patching work shall match adjacent existing work unless otherwise noted.
- C. Related Sections include the following:
 - 1. Divisions 02 through 31 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements in this Section apply to plumbing, mechanical and electrical installations. Refer to Divisions 21 through 28 Sections for other requirements and limitations applicable to cutting and patching plumbing, mechanical and electrical installations.

1.2 DEFINITIONS

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

1.3 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.

2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and structural calculations showing integration of reinforcement with original structure.
7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 1. Primary operational systems and equipment.
 2. Air or smoke barriers.
 3. Fire-protection systems.
 4. Control systems.
 5. Communication systems.
 6. Conveying systems.
 7. Electrical wiring systems.
- C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 1. Water, moisture, or vapor barriers.
 2. Membranes and flashings.
 3. Exterior curtain-wall construction.
 4. Equipment supports.
 5. Piping, ductwork, vessels, and equipment.
 6. Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.
 - a. Processed concrete finishes.
 - b. Ornamental metal.
 - c. Preformed metal panels.
 - d. Roofing.
 - e. Firestopping.
 - f. Window wall system.
 - g. Stucco and ornamental plaster.
 - h. Finished wood flooring.
 - i. Wall covering.
 - j. HVAC enclosures, cabinets, or covers.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

- A. Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void warranties.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 FINAL CLEANING

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations. Cutting tools or saws shall be equipped with bays or containers, or connected to vacuum systems, to minimize dust.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete/Masonry: Cut using a cutting machine, such as a carborundum saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 02 Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of

- uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
- a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- D. Each Prime Contractor shall do cutting and patching in existing work or work already constructed required for the work involved in their Contract. Patch holes or openings left by him to match the unaltered existing construction:
1. In Work already constructed, lintels and structural supports required to maintain structural integrity shall be provided by the Contractor whose work requires the opening.
 2. Cutting of holes, installation of curbs and temporary, weatherproof and secured enclosures for penetrations through the existing Work shall be the responsibility of the Prime Contractor whose work requires the penetration. Actual roof flashing and associated work must be executed by a subcontractor, hired by the Prime Contractor, who is acceptable to the manufacturer of the existing roof which shall be certified, in writing, to the Owner and Architect/Engineer by the manufacturer. Existing warranty/guarantee shall be certified as remaining valid.
 3. For penetrations through new work, the Prime Contractor whose work requires the penetration, shall be responsible to provide the General Contractor of location, size and configuration required for the penetration well in advance of the scheduled work. Prime Contractor who requires penetrations through the new roof construction shall provide the prefabricated roof curb and temporary, weatherproof and secured enclosure on top of curb.
- E. Each Prime Contractor shall employ skilled and experienced installer to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
- F. Each Prime Contractor shall submit written request in advance of cutting or altering elements affecting:
1. Structural integrity of element.
 2. Integrity of weather-exposed or moisture-resistant elements.
 3. Efficiency, maintenance or safety of element.
 4. Visual qualities of sight-exposed elements.
 5. Work of Owner or separate contractor.
- G. Should conditions of work or the schedule indicate a change of products from original installation, each Prime Contractor shall submit request for substitution as specified in Section 01 60 00.
1. Inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.
 2. After uncovering work, inspect conditions affecting installation of products or performance of work.
 3. Report unsatisfactory or questionable conditions to Construction Manager and Architect/Engineer, in writing; do not proceed with Work until Architect/Engineer has provided further instructions.

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- H. Each Prime Contractor shall submit written notice to Architect designating the date and time the work will be uncovered.
1. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.
 2. Provide devices and methods to protect other portions of project from damage.
 3. Provide protection from elements for that portion of the project exposed by cutting and patching work and maintain excavations free from water.
- I. Each Prime Contractor shall execute cutting, fitting and patching including excavation and fill, to complete Work and to:
1. Make its several parts fit together properly.
 2. Uncover portions of the work to provide for installation of ill-timed work.
 3. Remove and replace defective work.
 4. Remove and replace work not conforming to requirements of the Contract Documents.
 5. Remove samples of installed work as specified for testing.
 6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
- J. Each Prime Contractor shall execute Work by avoiding damage to other work, and providing proper surfaces to receive patching and finishing.
- K. Each Prime Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- L. Each Prime Contractor shall restore Work with new products in accord with requirements of Contract Documents.
- M. Each Prime Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- N. Each Prime Contractor shall maintain integrity of wall, ceiling or floor construction; completely seal voids.
- O. Each Prime Contractor shall refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- P. Each Prime Contractor shall identify hazardous substance or condition exposed during the Work to the Architect for decision or remedy.
1. **Lead-Based Paint Disturbance:** Each Prime Contractor shall be responsible for lead-based paint disturbance precautions. Painted and varnished surfaces must be assumed to be coated with lead-based paint. When these surfaces are disturbed, that disturbance shall be conducted in accord with the Environmental Protection Agency (EPA) 40 CFR, Part 745 "Lead, Renovation, Repair and Painting Program". Compliance to include using EPA licenses and certified trained renovators, Owner and occupant notifications, work area containment, dust minimization and clean-up certification. Architect/Engineer shall be copied on the Owner and occupant notifications.

END OF SECTION 01.7329

SECTION 01.7419 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
 - 1. Division 01 Section 011200 "Multiple Prime Contracts" for coordination of responsibilities for waste management.
 - 2. Division 02 Section 024116 "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements.
 - 3. Division 04 Section "Unit Masonry Assemblies" for disposal requirements for masonry waste.

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 PERFORMANCE REQUIREMENTS AND RESPONSIBILITIES

- A. General: Achieve maximum end-of-Project rates for salvage/recycling of non-hazardous solid waste generated by the demolition and new construction Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, **including but not limited to the following:**

1. Demolition Waste:
 - a. Concrete
 - b. Concrete reinforcing steel
 - c. Concrete masonry units
 - d. Bricks
 - e. Roofing
 - f. Cast stone
 - g. Limestone
 - h. Wood studs
 - i. Wood flooring
 - j. Wood joists
 - k. Other wood materials
 - l. Structural and miscellaneous steel
 - m. Rough hardware
 - n. Insulation
 - o. Doors and frames
 - p. Door hardware
 - q. Windows
 - r. Glazing
 - s. Metal studs
 - t. Gypsum board
 - u. Acoustical tile and panels
 - v. Carpet
 - w. Demountable partitions
 - x. Equipment
 - y. Cabinets
 - z. Plumbing fixtures
 - aa. Piping
 - bb. Supports and hangers
 - cc. Valves
 - dd. Mechanical equipment
 - ee. Refrigerants
 - ff. Electrical conduit
 - gg. Copper wiring
 - hh. Lighting fixtures
 - ii. Lamps
 - jj. Ballasts
 - kk. Electrical devices
 - ll. Switchgear and panelboards
 - mm. Transformers
2. Construction Waste:
 - a. Masonry and CMU.
 - b. Insulation.
 - c. Carpet and Pad.
 - d. Gypsum board.
 - e. Piping.
 - f. Electrical conduit.
 - g. Lumber.

- h. Wood sheet materials.
- i. Wood trim.
- j. Metals.
- k. Roofing.
- l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood or any type of recyclable crates, including shipping pallets
 - 7) Plastic pails.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: General Contractor shall submit plan for all work associated building construction and renovation within fifteen (15) days of date established for Notice to Proceed.
- B. Sitework Contractor will be responsible for all construction waste generated by his activities and will comply with paragraph 1.3A as it relates to sitework demolition and waste.
- C. **For All Construction:**
The General Contractor shall develop and implement a Construction Waste Management Plan for all work associated with new construction and site, quantifying by weight, the percentage of waste materials diverted from landfill disposal. **All Contractors and Subcontractors are required to pay for and dispose of all their construction waste in accordance with the CWMP and its provisions throughout demolition activities.**

1.5 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Each Contractor shall submit monthly waste management reports to the General Contractor. Each month, the General Contractor shall compile the data from all Contractors and with each Application for Payment, submit report.
 - 1. Material category.
 - 2. Generation point of waste.
 - 3. Total quantity of waste in tons.
 - 4. Quantity of waste salvaged, both estimated and actual in tons.
 - 5. Quantity of waste recycled, both estimated and actual in tons.
 - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and

organizations. Indicate whether organization is tax exempt.

- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Qualification Data: For waste management coordinator.
- H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered. All refrigerant recovery activities will be the responsibility of the **General Contractor**

1.6 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: General Contractor and Construction Manager shall conduct conference at Project site with all Contractors to comply with requirements in Division 01 Section "Project Meetings." Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan including responsibilities of waste management coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

- A. General: Each Contractor shall provide sufficiently detailed waste management information for its Work as needed by the General Contractor for a waste management plan according to the requirements in this Section. Plan shall include waste identification and waste reduction work plan, and distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
 - 1. GC is to compile the waste management plan information of all Contractors into one plan, and remit

plan information as noted in Article 1.5.A.

- B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Each Prime Contractor shall implement approved waste management plan prepared by General Contractor. Each Prime Contractor shall provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Division 01 Section "Temporary Facilities and Controls."
- B. Waste Management Coordinator: General Contractor shall employ a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan and for designating location and sizes of all containers during the Project.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

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

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Permitted on Project site.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area on-site, designated by Owner.
 - 5. Protect items from damage during transport and storage.
- D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- F. Plumbing Fixtures: Separate by type and size.
- G. Lighting Fixtures: Separate lamps by type and protect from breakage.
- H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING, DEMOLITION, AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Owner.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

- A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
 - 1. Pulverize concrete to maximum 1-1/2-inch size.
 - 2. Crush concrete and screen to comply with requirements in Division 31 Section "Earth Moving" for use as satisfactory soil for fill or subbase.
- B. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
 - 1. Pulverize masonry to maximum 1-1/2-inch size.
 - a. Crush masonry and screen to comply with requirements in Division 31 Section "Earth Moving" for use as general fill in the areas of structural additions.
 - b. Crush masonry and screen to comply with requirements in Division 32 Section "Plants" for use as mineral mulch.
 - 2. Clean and stack undamaged, whole masonry units on wood pallets.
- C. Metals: Separate metals by type.
 - 1. Structural Steel: Stack members according to size, type of member, and length.
 - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

- D. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- E. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- F. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- G. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 - 1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- H. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- I. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - 2. Polystyrene Packaging: Separate and bag materials.
 - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.
 - 1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
 - a. Comply with requirements in Division 32 Section "Plants" for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and

areas.

- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 01.7419

SECTION 01.7700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Instruction of Owner's personnel.
 - 4. Final cleaning.
- B. Related Sections include the following:
 - 1. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for products of those Sections.
 - 2. Division 01 Section 019113 "General Commissioning Requirements" for additional information and procedures.

1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals,
 - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - 7. Complete startup testing of systems.
 - 8. Submit test/adjust/balance records.
 - 9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 10. Complete final cleaning requirements, including touchup painting.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect, Owner and Construction Manager 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, which must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. If a reinspection identifies work that remains uncompleted, the Contractor shall be responsible for the cost of additional inspections by the Architect and Construction Manager. The Architect and Construction Manager will submit a time and material invoice to the Owner, who will deduct the amount from the balance due to the contractor.
3. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, each contractor shall complete and submit the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures".
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit Consent of Surety to final payment using AIA Document G707.
4. Submit a Contractors Affidavit of Payment of Debts and Claims using AIA Document G706.
5. Submit a Contractors Affidavit of Release of Liens using AIA Document G706A.
6. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
8. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect, Owner and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect, Owner and Construction Manager 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.
2. If a reinspection identifies work that remains uncompleted, the Contractor shall be responsible for the cost of additional inspections by the Architect and Construction Manager. The Architect and Construction Manager will submit a time and material invoice to the Owner, who will deduct the amount from the balance due to the contractor.

1.4 WARRANTIES

- A. Submittal Time: Submit written warranties to the Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-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.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 DEMONSTRATION AND TRAINING

- A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and any equipment not part of a system.
1. Provide instructors experienced in operation and maintenance procedures and factory trained to provide instruction and training.
 2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
 3. Schedule training with Owner with at least 14 days' advance notice.
- B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for the following:
1. System design and operational philosophy.
 2. Review of documentation.
 3. Operations, Adjustments & Troubleshooting.
 4. Maintenance & Repairs.
- C. Also comply with Section 019113 "General Commissioning Requirements".
- D. System start up and commission must be completed prior to scheduling Owner instructional training.

3.2 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Each prime Contractor is responsible for final cleaning of the work included in their contract. The General Contractor is responsible for overall coordination of the final cleaning. If any Contractor fails to provide final cleaning as specified herein, the Owner reserves the right to perform the final cleaning either with their own personnel or an outside agency. The cost of final cleaning if performed by the Owner or their representatives shall be deducted from the amount due to the contractor responsible. If the responsible contractor cannot be identified, the Owner will apportion the cost to each individual contractor as necessary.
- C. 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 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. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - g. Sweep concrete floors broom clean in unoccupied spaces.
 - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - j. Remove labels that are not permanent.
 - k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - l. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Replace parts subject to unusual operating conditions.

- n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - p. Clean ducts, blowers, and coils if units were operated without filters during construction.
 - q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Leave Project clean and ready for occupancy.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01.7700

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SECTION 01.7823 – OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Maintenance manuals for the care and maintenance of products, materials, finishes systems and equipment.
- B. Related Sections include the following:
 - 1. Division 01 Section "Summary of Multiple Contracts" for coordinating operation and maintenance manuals covering the Work of multiple contracts.
 - 2. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 3. Division 01 Section "Closeout Procedures" for submitting operation and maintenance manuals.
 - 4. Division 01 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
 - 5. Section 019113 "General Commissioning Requirements" for related commissioning activities.
 - 6. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for products in those Sections.

1.2 DEFINITIONS

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

1.3 SUBMITTALS

- A. Initial Submittal: Submit 3 draft copies of each manual at least 21 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return 1 copy of draft and mark whether general scope and content of manual are acceptable.
- B. Final Submittal: Submit 3 copies of each manual in final form at least 21 days before final inspection. Architect will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.4 COORDINATION

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 – PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."
- F. Provide O&M documentation in accordance with Commissioning requirements defined in Section 019113.

2.2 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.

3. Name and address of Owner.
 4. Date of submittal.
 5. Name, address, and telephone number of Contractor.
 6. Name and address of Architect.
 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (115-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch (115-by-280-mm), 20-lb/sq. ft. (75-g/sq. m) white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
- E. Provide Manuals in accordance with Commissioning requirements defined in Section 019113.

2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.

- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number.
 2. Manufacturer's name, phone numbers and address for support.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.

8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and crossreference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard printed maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training videotape, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original Project Record Documents as part of operation and maintenance manuals.
 - 2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."
- G. Comply with Division 01 Section "Closeout Procedures" for the schedule for submitting operation and maintenance documentation.

END OF SECTION 01.7823

SECTION 01.7839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
- B. Related Sections include the following:
 - 1. Division 01 Section 019113 "General Commissioning Requirements" for additional information and procedures.
 - 2. Division 01 Section 017419 "Construction Waste Management" for additional information and procedures.
 - 3. Division 01 Section "Summary of Multiple Contracts" for coordinating Project Record Documents covering the Work of multiple contracts.
 - 4. Division 01 Section "Closeout Procedures" for general closeout procedures and maintenance manual requirements.
 - 5. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 6. Divisions 02 through 33 Sections for specific requirements for Project Record Documents of products in those Sections.

1.2 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Each Prime Contractor shall scan and submit one marked-up .pdf set of record drawings electronically to the Architect and Construction Manager.
 - 2. Submit each drawing whether or not changes and additional information were recorded.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

2.2 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

2.3 TOWNSHIP REQUIREMENT FOR RECORD DRAWINGS

- A. In addition to requirements specified in this section and other sections of the specifications Record Drawings shall include the requirements of the Code Enforcement office and Township officials.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 01.7839

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SECTION 01.7900 – DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of all systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of all systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Division 01 Section "Project Management and Coordination" for requirements for pre-instruction conferences.

1.2 SUBMITTALS

- A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. At completion of training, submit two complete training manuals for Owner's use.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.
- E. Provide approved final Operations and Maintenance Manuals for use during the training sessions.

1.3 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Schedule training only after all systems have been tested and are fully operational.

1.4 COORDINATION

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

PART 2 – PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
 - 1. HVAC systems, including air-handling equipment, air distribution systems and terminal equipment and devices.
 - 2. HVAC instrumentation and controls.
 - 3. Electrical service and distribution system.
 - 4. Packaged engine generators, including transfer switches.
 - 5. Lighting equipment and controls.
 - 6. Communication systems, including equipment. Inter-communication, clocks and programming voice and data and television.
 - 7. Food Service Equipment
 - 8. Fire suppression system
 - 9. Plumbing systems
 - 10. Equipment
 - 11. Finishes
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.

- c. Maintenance manuals.
- d. Project Record Documents.
- e. Identification systems.
- f. Warranties and bonds.
- g. Maintenance service agreements and similar continuing commitments.
- 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
- 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.
- C. Provide the final training manual, a site-specific agenda and the resume of the training instructor to the Construction Manager two weeks prior to the scheduled training session.

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Owner will furnish Contractor with names and positions of participants.
 - 2. Schedule training only after system has been tested and is fully operational
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season. Schedule training with Owner, through Architect, with at least fourteen days advance notice. Start up and commission of systems must be completed before scheduling instructional session.
- D. Review all valve tags, labeling and access locations and provide summary or plans of all valves, shutoffs and maintenance access locations.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
- F. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.
- G. DVD Taping: Provide DVD of training session in digital format requested by Owner and provide copies to Owner within 10 days of training session

END OF SECTION 01.7900

DIVISION 02 – EXISTING CONDITIONS

SECTION 02 05 00 – DEMOLITION, REMOVAL AND HAULING

1.1 SCOPE OF WORK

- A. The Contractor shall provide all equipment, labor, tools, materials, etc. necessary to perform all demolition and removal as outlined in this section and per the Demolition Plan.
- B. Prior to the start of any demolition work, the contractor shall be responsible to call 8-1-1 at least three business days before starting any demolition to ensure the proper labeling of any on/off-site utilities.
- C. The contractor is responsible to maintain a clean working environment during demolition and all other phases of construction. The Contractor shall remove all identified materials, debris, and equipment from the site. The contractor shall take any and all measures necessary to protect the general public from construction debris, material and machinery.
- D. During the demolition phase, and all other phases of construction, the Contractor shall maintain barriers, lights, warning flags, and any other items to protect their work and to prevent accidents to vehicles and workers. Under no circumstances shall an excavated area remain open without the proper precautions mentioned above. The safety and welfare of park users shall be protected by the contractor at all times during construction and at the completion of each day's work.

1.2 EXECUTION

The following work is scheduled to be performed as part of this section:

- A. Demolish and remove existing trees, shrubs and associated roots as depicted on the Demolition Plan.
- B. Demolish and remove the existing concrete pad/original garage foundation.
- C. Demolish and remove the existing asphalt driveway.
- D. Demolish and remove the existing concrete walkway.
- E. Locate, demolish, and remove existing septic tank, septic field and any unsuitable soils (Identified by the Owner Representative).
- F. Disconnect and remove the existing residential fuel oil tank. Cap the existing fuel oil line at the exterior façade of the existing residence.
- G. The contractor shall be responsible for disposing of all demolished items off-site at facilities accepting identified items. Under no circumstances shall demolished material be buried on-site.

SECTION 02.4119 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes selective site demolition:
 - 1. Demolition of designated site improvements including paving, curbing, site walls, and utility structures.
 - 2. Demolition of below-grade foundations and site improvements to depth to avoid conflict with new construction or site work.
 - 3. Salvage of designated items.
 - 4. Protection of site work and adjacent structures.
 - 5. Disconnection, capping, and removal of utilities.
 - 6. Pollution control during building demolition, including noise control.
 - 7. Removal and legal disposal of materials.
 - 8. Designated site improvements and adjacent construction.
 - 9. Interruption, capping or removal of utilities as applicable.
- B. Selective building demolition:
 - 1. Selective demolition of interior partitions, systems, and building components designated to be removed.
 - 2. Selective demolition of exterior facade, structures, and components designated to be removed.
 - 3. Protection of portions of building adjacent to or affected by selective demolition.
 - 4. Removal of abandoned utilities and wiring systems.
 - 5. Notification to Owner of schedule of shut-off of utilities which serve occupied spaces.
 - 6. Pollution control during selective demolition, including noise control.
 - 7. Removal and legal disposal of materials.
 - 8. Protection of designated site improvements and adjacent construction.
 - 9. Salvage of designated items.
 - 10. Interruption, capping or removal of utilities as applicable.
- C. Hazardous Materials:
 - 1. Removed under separate prior contract.
 - 2. Reference specification sections 03126 Existing Hazardous Material, 03126A Existing Hazardous Material Report, & 03126B Existing Asbestos Exterior Bulk Sampling

1.2 SUBMITTALS

- A. Submit under provisions of Section 01.3000 – Administrative Requirements.
- B. Schedule: Submit for approval selective demolition schedule, including schedule and methods for capping utilities to be abandoned and maintaining existing utility service.

1.3 QUALITY ASSURANCE

1. Codes and Regulations: Comply with governing codes and regulations. Use experienced workers,

1.4 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to starting work of this section.

1.5 SEQUENCING

- A. Immediate areas of work will not be occupied during selective demolition. The public, including children, may occupy adjacent areas.
- B. No responsibility for buildings and structures to be demolished will be assumed by the owner.
- C. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2 - PRODUCTS

1. Not applicable to this Section.

PART 3 - EXECUTION

3.1 SELECTIVE DEMOLITION

- A. Demolition Operations: Do not damage building elements and improvements indicated to remain. Items of salvage value, not included on schedule of salvage items to be returned to Owner, shall be removed from structure. Storage or sale of items at project site is prohibited.
- B. Utilities: Locate, identify, disconnect, and seal or cap off utilities in buildings to be demolished.
- C. Shoring and Bracing: Provide and maintain interior and exterior shoring and bracing.
- D. Occupied Spaces: Do not close or obstruct streets, walks, drives or other occupied or used spaces or facilities without the written permission of the Owner and the authorities having jurisdiction. Do not interrupt utilities serving occupied or used facilities without the written permission of the Owner and authorities having jurisdiction. If necessary, provide temporary utilities.
- E. Operations: Cease operations if public safety or remaining structures are endangered. Perform temporary corrective measures until operations can be continued properly.
- F. Security: Provide adequate protection against accidental trespassing. Secure project after work hours.

- G. Restoration: Restore finishes of patched areas.

3.2 SCHEDULE

- A. Items for Protection During Demolition and Construction:
 - 1. Trees and plantings as selected by owner prior to construction
 - 2. Existing adjacent structure
- B. Items to be Salvaged for Reinstallation:
 - 1. Verify with owner prior to construction
- C. Items to be Salvaged for Delivery to Owner:
 - 1. Verify with owner prior to construction
- D. Utilities Requiring Interruption, Capping, or Removal:
 - 1. Electric
 - 2. Heat
 - 3. Water
 - 4. Gas
 - 5. Sewerage
 - 6. Steam
 - 7. Cable Television

END OF SECTION 02.4119

SECTION 03.3000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections:
 - 1. Division 31 Section "Earth Moving" for drainage fill under slabs-on-grade.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.
- D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
- E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the architect.

1.3 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Material certificates.
- C. Material test reports.
- D. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that 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, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- F. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- 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.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- D. 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."

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I, color as indicated on Architectural Contract Documents. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F or C.

b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, graded.

1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Lightweight Aggregate: ASTM C 330, 3/4-inch (19-mm) nominal maximum aggregate size.

D. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will 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.

2.5 WATERSTOPS Flexible Rubber Waterstops: CE CRD-C 513, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

B. Chemically Resistant Flexible Waterstops: Thermoplastic elastomer rubber waterstops, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints; resistant to oils, solvents, and chemicals. Factory fabricate corners, intersections, and directional changes.

C. Flexible PVC Waterstops: CE CRD-C 572, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

D. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).

E. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch (10 by 19 mm).

2.6 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class [A] [B] [C]. Include manufacturer's recommended adhesive or pressure-sensitive tape.

- B. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25 mm) thick.
- C. Granular Material: Refer to Geotechnical Report.

2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

2.9 CONCRETE MIXTURES

- 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.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
 - 1. Fly Ash: 25 percent.
 - 2. Combined Fly Ash And Pozzolan: 25 percent.
 - 3. Ground Granulated Blast-Furnace Slag: 25 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 water-cementitious materials ratio below 0.50.
- D. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: As indicated on contract documents.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 - 3. Slump Limit: 8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
 - 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.
 - 5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

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 C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- 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. Chamfer exterior corners and edges of permanently exposed concrete except where other construction will be built against or above the concrete with the face flush with the concrete.

3.2 EMBEDDED ITEMS

- 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.

3.3 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

- 1. Lap joints 6 inches (150 mm) and seal with manufacturers recommended tape.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

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

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

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

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

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

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

3.5 JOINTS

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

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

- C. Contraction or Control 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. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

- D. 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.
- E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Do not add water to concrete during delivery, at project site, or during placement unless approved by Architect.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be 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. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.

3.7 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 as indicated on Architectural documents..
- 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, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete as indicated on Architectural documents.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated on Architectural documents.
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 - 2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. 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.

3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in one direction.
 1. Apply scratch finish to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes and as indicated on Architectural documents.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 1. Apply float finish to surfaces to receive trowel finish or to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo and as indicated on Architectural drawings.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system and as indicated on Architectural documents.
 2. Finish on-grade and supported surfaces to the applicable minimum following tolerances, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface. The contractor shall supply floor leveling material and other corrective measures in areas where floor finish provisions exceed the flatness and levelness requirements. **Per ACI 302.1R, F(L) requirements should only be applied to slabs-on-ground that are level and suspended slabs that are both level and shored.**
 - a. For carpeted slabs, specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15.
 - b. For thin floor coverings, specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-grade.
 - c. For thin floor coverings, specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15; for suspended slabs.

- d. For very flat floors for high-speed forklifts, air pallets, and ice and roller rinks, specified overall values of flatness, F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness, F(F) 30; and of levelness, F(L) 24.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method and as indicated on Architectural documents. While concrete is still plastic, slightly scarify surface with a fine broom.
 - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m 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. 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.
 - 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 (300 mm), 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.
 - 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.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
 - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a 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. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

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

3.11 FIELD QUALITY CONTROL

- A. Except as otherwise indicated on drawings or specified herein, all work under this Section shall conform to applicable requirements of the local building code and regulations of all government authorities having jurisdiction, applicable state code, and ACI 318.
- B. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections, and to prepare and submit reports.
- C. Testing shall at least meet the minimum requirements set forth in ACI 301.
- D. Testing frequency shall at least meet the minimum requirements set forth in ACI 301 – specifically, obtain at least one composite sample for each 100 yd³, or fraction thereof, of each concrete mixture placed in any one day. When the total quantity of a given concrete mixture is less than 50 yd³, the strength tests may be waived by the Architect/Engineer.

END OF SECTION 03.3000

DIVISION 03 – CONCRETE
SECTION 03 30 00.0 – POURED IN-PLACE CONCRETE

1.1 SCOPE OF WORK

Provide necessary labor, materials, tools, equipment, and services to furnish and install all concrete curbs, concrete sidewalks, generator/propane tank foundations/slabs, light footings, flag pole foundations, steel bollard footings, wall foundations and concrete pipe encasements as indicated on the drawings and per manufacturer's specifications. This specification is not to be used for foundations related to building construction.

1.2 QUALITY ASSURANCE

Comply with the applicable requirements of the following codes and standards, except as otherwise shown or specified:

A. Form 408 Specifications, Commonwealth of Pennsylvania Department of Transportation (PennDOT), latest edition.

1.3 TEST AND REPORTS

- A. Arrange and pay for test(s) of each day's pour. Make one test of each 50 cubic yards or fraction thereof. Tests shall be performed by a testing laboratory approved by the Township Representative or inspector. A test for compressive strength shall consist of three 6 inch by 12 inch cylinders made, cured and tested in accordance with ASTM C39. Perform one cylinder in seven days and two cylinders at 28 days. Perform slump test in accordance with ASTM C143. Furnish test reports to the Township Representative.
- B. Any concrete which does not satisfactorily meet the tests shall be removed and replaced when directed by the Township Representative or Inspector.
- C. A delivery ticket shall accompany each load of concrete, setting forth the class or type of concrete being delivered and the exact times the concrete was mixed and delivered. The ticket shall be signed by the representative of the inspection agency and the receiver at the job site. Upon reaching the job, each certified load of concrete shall have the exact time of dumping noted on the ticket and a check mark placed opposite the class of concrete delivered. Provide the Landscape Architect with a copy of all delivery tickets.

1.4 MATERIALS

- A. Concrete shall be Class A concrete, having a minimum compressive strength of 3500 psi and 4000 psi at an age of 28 days. Concrete materials, proportioning, consistency, and strength shall be in accordance with Section 704.1 (g) 2 of PennDOT Publication 408. Concrete shall be obtained from a local, PADOT approved central mixing plant.
- B. AASHTO #57
- C. Water shall be clean, free from organic or vegetable matter, acid, alkali, or other injurious elements.
- D. Reinforcing bars shall conform to ASTM A615 Grade 60, where applicable.
- E. 6" x 6" x 5mm welded wire mesh (Police/Admin enclosure slab)

- F. 4" square, 10 gauge welded wire mesh (Public Works slab)(Police/Admin overhang parking bollard footing)
- G. 12 foot long ground rod (Parking/Ornamental Light footings)
- H. Anchor bolts (Light footings, as per manufacturer)
- I. Fiberglass ground sleeve (flagpole foundation)
- J. Concrete masonry units shall be hollow, load bearing units conforming to ASTM Specifications C90.85, Grade N. Units shall have average compression strength not less than 1000 PSI.
- K. Mortar shall be type "M" conforming to ASTM Specification C-270.68 and shall have average compression strength of 2500 PSI. in 28 days.
- L. Horizontal reinforcement shall be new billet steel bars and conforming to ASTM A-615, grade 60 (60,000 PSI yield).
- M. Brick veneer shall match the style and color being used on the buildings
- N. Hot-dip Galvanized, corrugated masonry anchors with anchor hole
- O. Galvanized masonry anchors.
- P. Cast concrete coping
- Q. Nonmetallic, non-shrink grout (stair handrails)

1.5 EXECUTION

- A. Construct concrete paving in accordance with the applicable requirements of PennDOT Publication 408. Footings/foundations for site lighting, flagpoles, bollards, railings, fencing, walls and gates shall conform to PennDOT specifications for concrete footings or according to manufacturer's specification, manufacturer's specifications taking precedence. Footings shall conform to the dimensions as shown in the drawings. Each footing shall be constructed in one pour and contain a collar to prevent moisture from entering core.
- B. Utility conduit shall be installed prior to the pouring of concrete paving, and according to the detail plans.
- C. The surface of concrete sidewalk/slab paving shall be tooled and given a broom finish as shown on the detail drawing. Construct broom finish carefully to make broom lines straight and parallel. Construct sample(s) of broom finish 2' x 2' minimum size for Landscape Architect's review and approval. The approved sample of the broom finish shall be the standard for constructing all broom finished concrete. Do not discard the approved sample until all broom finished concrete is constructed.
- D. Concrete Sidewalks/slab paving shall be constructed as follows:
 - a. Subgrade - shall be excavated and compacted to 8" to 18" below finished grades, depending upon whether a "haunch" is needed around the perimeter of the slab or not.
 - b. Base Course - on the subgrade, a foundation of 4" to 6" depth of AASHTO #57 stone shall be laid.
 - c. Surface Course - 4" to 12" depth Portland cement concrete according to PennDOT specifications shall be poured creating a level, even surface. Once the concrete has completed its initial set, the concrete shall be worked smooth with a wooden float and proper markings and joints cut thereon. No additional finishings of any kind will be permitted after the concrete is finally set. Construction joints at 1/2" depth

shall be scored every four feet, and midway on the lengthwise dimension of the paving. Premolded fiber expansion joints, 1/2" in thickness and full-depth, shall be laid crosswise every 20 feet or as shown on the drawings.

E. Curbs shall be constructed as follows:

- a. Curbs shall be of the highest quality, finish, layout and construction for acceptance.
- b. The curbs shall be constructed in uniform lengths or sections of 10 feet. Each length of curing shall be separated during construction by sheet steel templates, 1/8 inch in thickness made to conform to the size of the curbing, these templates to be removed after the concrete has developed initial set. Particular attention must be given to ensure having all templates set perpendicularly between the length or blocks and to have all exposed faces finished smoothly to the certified lines and grades. Premolded expansion joint filler 1/2 inch in thickness, located at the end of sections of curbing and at an interval not exceeding 30 feet. All curbing shall be finished at the upper edge of the curb with a radius of not less than 1 inch.
- c. Curb shall be cured and protected as specified in Section 1001.3 (p), PennDOT Specifications. No curing except membrane curing will be permitted.

F. Concrete Masonry Unit Walls with veneer brick and conc. coping shall be constructed as follows:

- a. The trash enclosure/generator walls and spread footings shall be constructed in lengths and heights as indicated on the detail plan.
- b. The contractor shall excavate to a proper depth below the top of the finished wall, so that satisfactory foundation may be obtained. If satisfactory foundation material is not found at the proper depth for the wall to be constructed, the Township Representative may direct the use of sub-base material for the purpose of providing suitable base for the wall. In excavating this trench for the wall, care must be taken not to disturb the natural soil to a greater depth than necessary. Compaction of the soil to 95% proctor is required. The Contractor shall excavate the width of the trench to accommodate the AASHTO #57 stone backing as per plans.
- c. After the base is excavated and prepared, the contractor shall furnish and set securely to the lines and grades indicated on the plans. The foundations of the walls must conform to the certified lines and grades when completed. Steel reinforcement shall be installed according to the size and spacing identified on the detail drawings.
- d. Reinforcing rods shall be placed vertically and horizontally as indicated on the drawings. Vertical bars shall be bent as shown on the drawings, and all bars shall be a minimum of 3" from the bottom of the footing. Placing of reinforcing shall conform to the recommended CRSI practice for placing reinforcing bars. Reinforcing bars shall extend vertically from the footing through the bottom core of the CMU blocks as detailed.
- e. Below grade courses of CMU units shall be laid the length of the spread footing, perpendicular to the footing and overlapping the reinforcing bars to provide a 4" haunch for stone veneer. Mortar joints shall not exceed 1". CMU units to receive

brick veneer shall be installed parallel to the concrete spread footing, allowing an 8" haunch to support the weight of the veneer. Block walls shall be installed plumb and straight. After the joints have set, backfill the voids in CMU with concrete. After concrete and mortar has set to required strength install remaining block courses of wall with long axis running along centerline of footing.

- f. Expansion joints shall be placed in the wall each 10 linear feet and at the junction with the piers.
 - g. Backfilling against the non-veneer CMU walls shall not be permitted until mortar has set. After mortar has set, backfill shall be laid and compacted in eight inch lifts and possess a compaction density of 95% and be appropriate to receive surface lawn and/or new concrete paving.
 - h. Brick veneer shall be installed on 8" haunch of CMU foundation walls on 1/2" mortar bed.
 - i. Brick veneer shall be installed according to the pattern of the new municipal buildings, installing galvanized masonry anchors every third course vertically and every 32" horizontally.
 - j. Mortar joints to be 3/8", concave joints.
 - k. Joint at junction of cast stone wall cap and top course of stone is to be seated to prevent penetration of moisture.
 - l. Cast concrete coping shall be installed upon initial set of brick veneer.
- G. Concrete for stairs shall be constructed according to the lines, dimensions, and locations shown on the drawings and as per these concrete specifications.
- a. The contractor shall excavate to a proper depth below the top of the finished stairs, so that satisfactory foundation may be obtained. If satisfactory foundation material is not found at the proper depth for the stairs to be constructed, the Township Representative may direct the use of sub-base material for the purpose of providing suitable base for the stairs. In excavating for the stairs, care must be taken not to disturb the natural soil to a greater depth than necessary.
 - b. After the foundation is excavated and prepared, the contractor shall furnish and set securely to the lines indicated on the plans and approved in the field, proper forms and templates for the stairs. All forms shall be of steel and of approved design. Any displacement of these forms shall be remedied by the contractor. Bars shall be placed and installed as shown on the detail drawings and per this specification. The installation of AASHTO #57 stone shall be installed prior to the installation of the required rebar.
 - c. The entire exposed surface of the stairs shall be finished to a smooth even surface with a wooden float. If any holes or defects develop, they shall be filled at once with mortar composed of one part of Portland cement and two parts of sand and applied with a wooden float. When completed, the stairs shall be moist and

protected for a period of three days. Forms shall be removed within 24 hours after the reinforced concrete has been placed for the stairs, and

- d. Before any concrete is placed for the stairs, the contractor must have an inspection made to check lines, grades, depth, width, and bar placements. Any concrete or bars placed without the approval of the Township Representative will be condemned by the Township and complete removal and reconstruction ordered.
- e. Handrails shall be core drilled using a diamond-tipped core drill to create holes that are at least 1 inch larger than the diameter of the railing posts and deep enough for a secure hold (typically 3-4 inches). Slightly dampen the drilled holes before installing the handrails but avoid standing water. Insert the railing posts, and secure them with non-metallic/non-shrink grout, ensuring a waterproof and sturdy installation. Ensure that handrails level and plumb. Temporarily brace the railing to ensure it remains level and secure while the cement cures. Let the grout cure completely before removing the bracing and using the railing. Use a damp sponge to clean up any excess mortar.

H. Curing

- a. Concrete shall be cured and protected as specified in Section 1001.3 (p), PennDOT Specifications. No curing except membrane curing will be permitted.

I. Backfilling

- a. After the concrete has attained the required strength, the spaces in front and back of the curb, footings, slabs and sidewalks shall be backfilled with approved material in layers of not more than 4 inches in depth, which shall be thoroughly compacted mechanically to the required elevation and cross section.

1.6 CLEANING

- A. Clean up debris and unused material and remove from the site. Clean up all site furniture and paving from any debris.

DIVISION 03 – CONCRETE

SECTION 033000.0 – CONCRETE SIDEWALK/ VEHICULAR APRON, FOUNDATION (GENERATOR), SLAB, PAD (TRASH ENCLOSURE AREA), CURBS, AND FOOTINGS

3.1 SCOPE OF WORK

Provide necessary labor, materials, tools, equipment, and services to furnish and install all concrete curbs, generator/propane tank foundation/slab, and site furniture and light footings as indicated on the drawings and per manufacturer's specifications. This specification is not to be used for the building foundation.

3.2 QUALITY ASSURANCE

Comply with the applicable requirements of the following codes and standards, except as otherwise shown or specified:

A. Form 408 Specifications, Commonwealth of Pennsylvania Department of Transportation (PennDOT).

3.3 TEST AND REPORTS

- A. Arrange and pay for test(s) of each day's pour. Make one test of each 50 cubic yards or fraction thereof. Tests shall be performed by a testing laboratory approved by the Township Representative or inspector. A test for compressive strength shall consist of three 6 inch by 12 inch cylinders made, cured and tested in accordance with ASTM C39. Perform one cylinder in seven days and two cylinders at 28 days. Perform slump test in accordance with ASTM C143. Furnish test reports to the Township Representative.
- B. Any concrete which does not satisfactorily meet the tests shall be removed and replaced when directed by the Township Representative or Inspector.
- C. A delivery ticket shall accompany each load of concrete, setting forth the class or type of concrete being delivered and the exact times the concrete was mixed and delivered. The ticket shall be signed by the representative of the inspection agency and the receiver at the job site. Upon reaching the job, each certified load of concrete shall have the exact time of dumping noted on the ticket and a check mark placed opposite the class of concrete delivered. Provide the Landscape Architect with a copy of all delivery tickets.

3.4 MATERIALS

- A. Concrete shall be Class A concrete, having a minimum compressive strength of 3500 psi and 4000 psi at an age of 28 days. Concrete materials, proportioning, consistency, and strength shall be in accordance with Section 704.1 (g) 2 of PennDot Publication 408. Concrete shall be obtained from a local, PADOT approved central mixing plant.
- B. No. 2A Modified Stone
- C. Water shall be clean, free from organic or vegetable matter, acid, alkali, or other injurious elements.
- D. All reinforcing bars shall conform to ASTM A615 Grade 60, where applicable.
- E. 6" x 6" x 5mm welded wire mesh
- F. #4 rebar

- G. Parking lot lights footing
 - a. 12 foot long ground rod
 - b. AASHTO #57 Stone
 - c. 1 inch PVC conduit
 - d. Anchor bolts per manufacturer

3.5 EXECUTION

A. Surfaces: The surface of concrete paving shall be tooled and given a broom finish as shown on the detail drawing. Construct broom finish carefully to make broom lines straight and parallel. Construct sample(s) of broom finish 2' x 2' minimum size for Landscape Architect's review and approval. The approved sample of the broom finish shall be the standard for constructing all broom finished concrete. Do not discard the approved sample until all broom finished concrete is constructed.

B. Concrete slabs shall be constructed as follows:

1. Subgrade - shall be excavated and compacted to 95% Proctor
2. Base Course - on the subgrade, a foundation of 6" depth 3/4" crushed stone shall be laid.
3. Reinforcement – WWM and/or #4 rebar
4. Surface Course - 6" depth Portland cement for the surfaces and 12" for the haunches (as shown on the detail drawings) concrete according to PennDOT specifications shall be poured. Once the concrete has completed its initial set, the concrete shall be worked smooth with a wooden float and proper markings and joints cut thereon. No additional finishings of any kind will be permitted after the concrete is finally set. Scoring joints at 1/2" depth shall be scored every four feet, and midway on the lengthwise dimension of the paving. Premolded fiber expansion joints, 3/8" in thickness and full-depth, shall be laid crosswise every 20 feet max. or as shown on the drawings.

C. Curbs shall be constructed as follows:

1. Curbs shall be of the highest quality finish, layout, and construction for acceptance.
2. The curbs shall be constructed in uniform lengths or sections of 10 feet. Each length of curing shall be separated during construction by sheet steel templates, 1/8 inch in thickness made to conform to the size of the curbing, these templates to be removed after the concrete has developed initial set. Particular attention must be given to ensure having all templates set perpendicular between the length or blocks and to have all exposed faces finished smoothly to the certified lines and grades. Premolded expansion joint filler 1/2 inch in thickness located every 20 feet and control joints every 10 feet.
3. Upper edge of the curb shall include 3/4" radius curve as shown on detail drawings.
4. Curb shall be cured and protected as specified in Section 1001.3 (p), PennDOT Specifications. No curing except membrane curing will be permitted.

D. Concrete Footings for lighting shall be constructed as follows:

1. 4" depth by 2' width bed of AASHTO #57 stone
2. Footing shall be 3500 PSI concrete with #4 bars installed 12" O.C. crosswise
3. 2' dia. Footing to protrude 3' above finished grade and 5' below finished grade
4. Conduit shall extend 3" above surface of footing, pole mounting shall be as per manufacturer's specification.

E. Concrete foundation for generator shall be constructed as follows:

1. Subgrade to be compacted to 95% dry weight density
2. 6" minimum depth of compacted PennDOT #57 stone or #67 stone
3. Provide #5 rebar around perimeter of foundation
4. 6" minimum depth concrete slab, 3500 PSI 28 day strength
5. Slab should protrude 2"-4" above finished grade
6. All exposed corners shall have a 3/4" chamfer
7. Concrete surface shall have a light broom finish

F. Concrete pad for trash enclosure shall be constructed as follows:

1. Subgrade - shall be excavated and compacted to 95% Proctor
2. Base Course - on the subgrade, a foundation of 6" depth 3/4" crushed stone shall be laid.
3. Surface Course - 6" depth Portland cement for the surfaces and 12" for the haunches (as shown on the detail drawings) concrete according to PennDOT specifications shall be poured. Once the concrete has completed its initial set, the concrete shall be worked smooth with a wooden float and proper markings and joints cut thereon. No additional finishings of any kind will be permitted after the concrete is finally set.
4. Premolded fiber expansion joints, 3/8" in thickness and full-depth, shall be laid crosswise per detail drawing.
5. Vinyl fence post leveling plate shall be installed 2" from edge of the concrete pad. Refer to detail drawing for fencing post installation.

G. Concrete sidewalk/vehicular apron shall be constructed as follows:

1. Subgrade – well compacted subgrade
2. Base Course – compacted 3/4" stone
(6" for vehicular apron)
(4" for sidewalk)
3. 4000 PSI air entrained concrete
(6" for vehicular apron)
(4" for sidewalk)
4. 3/8" expansion joint with non-extruding filler and sealer at 15' O.C. MAX. as shown on plan drawings
5. 1/4" wide scoring joints

3.6 CLEANING

A. Clean up debris and unused material and remove from the site. Clean up all site furniture and paving from any debris.

SECTION 03.3002 - CAST-IN-PLACE CONCRETE FOR UTILITIES

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. **LEED** requirements and forms as indicated in Division 01

1.2 SUMMARY

- A. This Section specifies cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes, for non-critical applications of concrete and for projects using small quantities of concrete.
 - 1. Work involves cast in place concrete associated with utility installation including:
 - a. Base slabs.
 - b. Encasements.
 - c. Pipe encasements.
 - d. Thrust blocking.
 - e. Miscellaneous.
 - f. Other Work as indicated on the drawings.
- B. Related Sections include the following:
 - 1. Division 01 Section 018113 "LEED & Sustainable Design Requirements" for additional information and procedures.
 - 2. Division 01 Section 017419 "Construction Waste Management" for additional information and procedures.
 - 3. List below only products and construction that the reader might expect to find in this Section but are specified elsewhere.
 - 4. Division 01 Section "Construction Waste Management" for additional information and procedures.
 - 5. Division 31 Section "Excavation, Backfill and Compaction of Utilities".
 - 6. Division 32 Section "Concrete Paving" for concrete pavement and walks.
 - 7. Division 33 Section "Water Utility Distribution Piping".
 - 8. Division 33 Section "Sanitary Utility Sewage Piping".
 - 9. Division 33 Section "Storm Utility Drainage Utilities".

1.3 SUBMITTALS

- A. General: In addition to the following, comply with submittal requirements in ACI 301.

- B. LEED Submittals: For products having recycled content and/or regional materials content, submit recycled content and regional materials documentation for each such product provided under work of this Section in accordance with Section 018113.
- C. Product Data: For each type of product indicated.
- D. Design Mixtures: For each concrete mixture.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Source Limitations: Obtain each type of cement of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- C. Comply with ACI 301, "Specification for Structural Concrete," including the following sections, unless modified by requirements in the Contract Documents:
 - 1. "General Requirements."
 - 2. "Formwork and Formwork Accessories."
 - 3. "Reinforcement and Reinforcement Supports."
 - 4. "Concrete Mixtures."
 - 5. "Handling, Placing, and Constructing."
 - 6. "Lightweight Concrete."
- D. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORMWORK

- A. Furnish formwork and formwork accessories according to ACI 301.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Plain-Steel Wire: ASTM A 82, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I or II. Supplement with the following:
 - a. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
 - 2. Blended Hydraulic Cement: ASTM C 595, Type IS, portland blast-furnace slag cement.
- B. Silica Fume: ASTM C 1240, amorphous silica.
- C. Aggregate: ASTM C 33, uniformly graded, from a single source, with coarse aggregate as follows:
 - 1. Class: 4S.
 - 2. Maximum Aggregate Size: 1 inch nominal.
 - 3. Do not use fine or coarse aggregates containing substances that cause spalling.
- D. Water: ASTM C 94.

2.4 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.5 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- B. Water: Potable.
- C. Clear Solvent-Borne Liquid-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. Bonding Agent: ASTM C 1059, Type II, and non-redispersible, acrylic emulsion or styrene butadiene.

2.7 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
 1. Do not use Owner's field quality-control testing agency as the independent testing agency.
- C. Proportion mixes to provide concrete with the following properties:
 1. Compressive Strength (28 Days): 4,000 psi.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 3 inches.
 - a. Slump Limit for Concrete Containing High-Range Water-Reducing Admixture: Not more than 8 inches after adding admixture to plant- or site-verified, 2- to 3-inch slump.
- D. Cementitious Materials: Provide composite mix of Portland Cement and Ground Granulated Blast-Furnace Slag or Blended Hydraulic Cement and reduce percentage, by weight, of Portland Cement (ASTM C150) relative to total cementitious material weight for each design mix to at least 40 percent less than standard regional concrete mix designs.

Limit percentage, by weight, of standard Portland cement (C-150), to the following **maximum** percentages of the cementitious portion of the mix while maintaining the above 40% required reduction in Portland cement across the project's total quantity of concrete:

 1. Exterior Concrete – 65 percent except as noted in paragraph E below.
- E. Cementitious Materials for Exterior Concrete: For concrete exposed to deicers, limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 requirements as follows:
 1. Fly Ash: 25 percent.
 2. Combined Fly Ash and Pozzolan: 25 percent.
 3. Ground Granulated Blast-Furnace Slag: 50 percent.
 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
 5. Silica Fume: 10 percent.
 6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent portland cement minimum, with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
- F. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus or minus 1.5 percent:
 1. Air Content: 6.0 percent for 1-inch maximum aggregate.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.2 STEEL REINFORCEMENT

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

3.3 CONCRETE PLACEMENT

- A. Comply with ACI 301 for measuring, batching, mixing, transporting, and placing concrete.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- C. Do not add water to concrete during delivery, at Project site, or during placement.
- D. Consolidate concrete with mechanical vibrating equipment.

3.4 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

3.6 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION 03.3002

DIVISION 03 – CONCRETE
SECTION 034000 – PRECAST CONCRETE PAVING

2.1 SCOPE OF WORK

Provide necessary labor materials, tools, equipment, and services to complete the precast concrete paving on sand base and the precast concrete unit paver, wall and stairs as shown on the drawings.

2.2 MATERIALS

- A. Paver walkways shall be Coventry Stone IV.
 - a. Size: 7 -3/4 x 11-5/8 x 2-3/4.
 - b. Color: to be 100% Harvest Blend.
 - c. Pattern: 90 degree Herringbone with solid course.
 - d. Paver walkway manufactured by:
EP Henry (1-800-EPHENRY) or approved equals.
 - e. Submit samples of pavers and wall units showing color ranges and style to Landscape Architect for approval.
 - f. Paver Edging: Pave Edge (flexible) as
Mfg. by:
Pave Tech, Inc.,
P.O. Box 31126
Bloomington, MN 55431
612- 881-5773, or equal. Submit sample for approval.
- B. Bedding sand for pavers
- C. Base Material: 2A modified per PADOT specifications, Pub. 408
- D. Joint Material: Joint-Lock Paver finishing sand. Color: Tan.

2.3 EXECUTION

- A. Pavers shall be installed as per detail drawings.
- B. Prepare compacted subgrade. Excavate any unsuitable material which may unsettle the pavers and replace with other compacted material as directed by the Landscape Architect. Subgrade shall be at a grade to allow for proper construction of paving and to meet final grades.
- C. The base course of 4" well-compacted (95% proctor) 2A modified shall then be laid. The base course shall not deviate more than 3/8" in elevation and shall be of a uniform thickness after compaction. Base course shall extend 6" beyond the edge of paving in all directions. Without damaging the base course, apply a setting bed of bedding sand at a uniform thickness of 1".
- D. Pavers shall be laid according to the detail drawings and manufacturer's specifications. Care shall be taken to align joints. Set pavers hand tight with a minimum of 1/8" joint at narrowest point of paver on setting bed, without disturbing the bedding sand. Do not set pavers with chipped or broken edges at the surface. Do not break pavers. Perimeter pavers shall be cut using a mechanical saw only. No pavers shall be cut with a chisel or hammer.

E. After laying pavers vibrate pavers into setting bed with low amplitude plate vibrator capable of a 3,000-5,000-pound compaction force. Brush surface of precast paving with Joint-Lock to fill vertical joints, vibrate into joints. Repeat brushing and vibrating until all joints are filled and to satisfaction of Landscape Architect. Remove excess Joint-Lock from the surface of precast paving. Do not allow pedestrian traffic on pavers until last of Joint-Lock has been swept into joints.

F. Surface of precast concrete paving shall conform to required lines and grades. The surface shall be even and consistent. A rough, uneven surface will not be considered acceptable.

G. Final elevations shall not deviate more than ¼" under a 10-foot-long straight edge.

H. Install Pave-Edge edging according to the drawings and manufacturer's specifications.

I. Backfill Pave Edge edges with topsoil and seed according to the specifications herein.

2.4 CLEANING

A. Clean up debris and unused material and remove from the site. Clean up all wall, stairs and paving from any debris.

DIVISION 3 - CONCRETE
SECTION 034826 - CONCRETE BUMPER BLOCK

2.1 SCOPE OF WORK

The Contractor shall provide the necessary tools, labor, equipment, and materials necessary to furnish and install the concrete bumper blocks (or Equal) as shown on the drawings.

2.2 MATERIALS

- A. 4000 PSI concrete bumper blocks
- B. #4 rebar, 2 feet length
- C. Epoxy Resin

2.3 EXECUTION

- A. Position the parking block in the parking lot as shown on detail drawings. Using the holes molded in the parking block as templates, mark the location of each hole on the asphalt surface.
- B. Remove the parking block. Using a high-speed hammer drill with a 7/16" masonry bit, drill a pilot hole at each marked location:
 - To avoid fracturing the asphalt with the spike
 - To make it easier to drive the spikes in during installation.

Note: If you are working with either a thin layer of asphalt or a soft substrate, you may want to 'cover' each spike with a small amount of activated epoxy resin immediately before driving the spike in place. This will help hold the parking block flat.

- C. Reposition the parking block so that the molded in holes line up vertically with the pilot holes you drilled. Starting with the center hole, use the hammer to drive the spikes through the parking block until the head of the spike is snug against the counter bored holes in the parking block. DO NOT DRIVE BEYOND "SNUG"! If driven too far, the spikes or hammer may damage the parking block and may void the product warranty.

CLEANING

- A. Clean up debris and unused material and remove from the site.

SECTION 04.2000 - UNIT MASONRY

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. Concrete masonry units.
2. Face brick.
3. Mortar and grout.
4. Steel reinforcing bars.
5. Masonry joint reinforcement.
6. Ties and anchors.
7. Embedded flashing.
8. Miscellaneous masonry accessories.
9. Cavity-wall insulation.

- B. Related Sections:

1. Section 033150 "Precast Concrete U-Lintels" for precast lintels.
2. Section 047300 "Limestone" at windows and other locations as indicated on the Drawings.
3. Section 051200 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
4. Section 055000 "Metal Fabrications" for furnishing steel lintels and shelf angles for unit masonry.
5. Section 071900 "Water Repellents" for water repellents applied to unit masonry.
6. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.
7. Section 089516 "Wall Vents" for wall vents (brick vents).
8. Section 321400 "Unit Paving" for exterior unit masonry paving.
9. Section 323223 "Segmental Retaining Walls" for dry-laid, concrete unit retaining walls.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
 - 2. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C 1314.

1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
 - 1. Clay Masonry Unit Test: For each type of unit required, according to ASTM C 67 for compressive strength.
 - 2. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C 140 for compressive strength.
 - 3. Mortar Test (Property Specification): For each mix required, according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
 - 4. Mortar Test (Property Specification): For each mix required, according to ASTM C 780 for compressive strength.
 - 5. Grout Test (Compressive Strength): For each mix required, according to ASTM C 1019.
 - 6. Prism Test: For each type of construction required, according to ASTM C 1314.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
 - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- C. Samples for Initial Selection:
 - 1. Face brick, in the form of straps of five or more bricks.
 - 2. Colored mortar.
 - 3. Weep holes/vents.
- D. Samples for Verification: For each type and color of the following:
 - 1. Exposed CMUs.

2. Face brick, in the form of straps of five or more bricks.
3. Special brick shapes.
4. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project.
5. Weep holes and vents.
6. Accessories embedded in masonry.

1.7 INFORMATIONAL SUBMITTALS

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Qualification Data: For testing agency.
- C. Material Certificates: For each type and size of the following:
 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
 - c. For exposed brick, include test report for efflorescence according to ASTM C 67.
 - d. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 2. Cementitious materials. Include brand, type, and name of manufacturer.
 3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 4. Grout mixes. Include description of type and proportions of ingredients.
 5. Reinforcing bars.
 6. Joint reinforcement.
 7. Anchors, ties, and metal accessories.
- D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

- E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
- F. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.8 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.
- E. 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 each type of exposed unit masonry construction in sizes approximately 72 inches long by 60 inches high by full thickness, including face and backup wythes and accessories. Build mock-up in location as approved by Architect for each type of exposed masonry construction.
 - a. Include a sealant-filled joint at least 16 inches long in each exterior wall mockup.
 - b. Include lower corner of window opening framed with limestone sill at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.
 - c. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
 - d. Include metal studs, sheathing, air barrier, insulation, veneer anchors, flashing, cavity drainage material, and weep holes in exterior masonry-veneer wall mockup.
 - e. The upper one-third of the mockup shall be metal wall panel wall construction. The mockup shall include the transition between the masonry and metal wall panel construction.
 - 2. Clean exposed faces of mockups with masonry cleaner as indicated.
 - 3. Protect accepted mockups from the elements with weather-resistant membrane.
 - 4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.

- a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.10 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

2. Protect sills, ledges, and projections from mortar droppings.
 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.
- B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 2. Provide bullnose units for outside corners unless otherwise indicated.
- B. Pattern: Refer to Drawings for stacking pattern.
- C. CMUs: ASTM C 90.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 2. Density Classification: Normal weight unless otherwise indicated.
 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

2.3 BRICK

- A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
 2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
 3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
 4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Face Brick: Facing brick complying with ASTM C 216 (BASIS OF DESIGN).
 1. Products: Brick to match existing building in size and appearance.
 2. Grade: SW.
 3. Type: FBS.
 4. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3350 psi.
 5. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested per ASTM C 67.
 6. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
 7. Size (Actual Dimensions): Match existing building
 8. Application: Use where brick is exposed unless otherwise indicated.

2.4 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or III, and hydrated lime containing no other ingredients, complying with ASTM C 207, Type S.
- D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Davis Colors; True Tone Mortar Colors.
 - b. Lanxess Corporation; Bayferrox Iron Oxide Pigments.

- c. Solomon Colors, Inc.; SGS Mortar Colors.
 - E. Colored Cement Product: Packaged blend made from portland cement and lime mix or mortar pigments, all complying with specified requirements, and containing no other ingredients.
 - 1. Colored Masonry Cement:
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Capital Materials Corporation; Flamingo Color Masonry Cement.
 - 2) Essroc, Italcementi Group; Brixment-in-Color.
 - 3) Holcim (US) Inc.; Rainbow Mortamix Custom Color Masonry Cement.
 - 4) Lafarge North America Inc.; U.S. Cement Custom Color Masonry Cement.
 - 5) Lehigh Cement Company; Lehigh Custom Color Masonry Cement.
 - 6) National Cement Company, Inc.; Coosa Masonry Cement.
 - 2. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
 - 3. Pigments shall not exceed 10 percent of portland cement by weight.
 - F. Aggregate for Mortar: ASTM C 144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
 - G. Aggregate for Grout: ASTM C 404.
 - H. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Euclid Chemical Company (The); Accelguard 80.
 - b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.
 - c. Sonneborn Products, BASF Aktiengesellschaft; Trimix-NCA.
 - I. Water: Potable.
- 2.5 REINFORCEMENT
- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
 - B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.

1. Interior Walls: Mill- galvanized, carbon steel.
 2. Exterior Walls: Hot-dip galvanized, carbonsteel.
 3. Wire Size for Side Rods: 0.148-inch diameter.
 4. Wire Size for Cross Rods: 0.148-inch.
 5. Wire Size for Veneer Ties: 0.187-inchdiameter.
 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.
- D. Masonry Joint Reinforcement for Multiwythe Masonry:
1. Adjustable(two piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch (1.5mm) and maximum vertical adjustment of 1-1/4 inches . Size ties to extend at least halfway through facing wythe but at least 5/8-inc cover on outside face,
 2. Basis of Design Product: Subject to compliance with requirements, provide Hohmann & Barnard Inc Model #270-2X Ladder-eye Lox-All adjustable Joint Reinforcement with 2X Hook, or Equal as approved by Architect in Writing before bid.
 - a. Where Discrepancies occur between the information contained in contract drawings and specification, submit discrepancies to the Architect in writing before the Bid.

2.6 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.
- C. Brick Veneer Anchor for Stud Back Up – Adjustable
1. Basis of Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc. Model HB-213-2X Adjustable Veneer Anchor with 2X HOOK, or equal as approved by the Architect in writing before the Bid.
 - a. Where discrepancies occur between the information contained in the Contract Documents and the Specification, submit discrepancies to the Architect in writing for clarification before the Bid.
 2. Backplate: 14 ga.
 3. Pintle: Length as desired.
 4. Finish: Hot-Dipped Galvanized.
- D. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.

1. Z-shaped ties with ends bent 90 degrees to provide hooks not less than 2 inches long may be used for masonry constructed from solid units.
 2. Where wythes do not align, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches.
 3. Wire: Fabricate from 3/16-inch- diameter, hot-dip galvanized steel wire.
- E. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.25-inch- diameter, hot-dip galvanized steel wire.
- F. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.25-inch- diameter, hot-dip galvanized steel wire.
- G. Partition Top anchors: 0.105-inch- thick metal plate with 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.
- H. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.
- I. Brick Veneer Anchor for CMU – Adjustable
1. Basis of Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc. Model HB-270-2X Adjustable Veneer Anchor with 2X HOOK, or equal as approved by the Architect in writing before the Bid.
 - a. Where discrepancies occur between the information contained in the Contract Documents and the Specification, submit discrepancies to the Architect in writing for clarification before the Bid.
 2. Pintle: Length as desired.
 3. Finish: Hot-Dipped Galvanized.

2.7 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.
- B. Dovetail Slots in Concrete: Furnish dovetail slots with filler strips, of slot size indicated, fabricated from 0.034-inch, galvanized steel sheet.
- C. Anchor Bolts: Headed steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

- D. Postinstalled Anchors: Torque-controlled expansion anchors or chemical anchors.
1. Load Capacity: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 2. 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.
 3. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.8 EMBEDDED THRU WALL FLASHING MATERIALS

- A. Flexible Flashing: Use the following unless otherwise indicated:
1. Product standard of quality:
 - a. York Manufacturing, Inc.; Multi-Flash SS
 - b. Illinois Products, Inc.; IPCO Stainless Steel Fabric Flashing
 - c. Prosoco, Inc.; R-Guard SS ThruWall
 - d. STS Coatings, Inc.; Wall Guardian Stainless Steel TWF
 - e. TK Products, Inc.; TK TWF
- B. Characteristics:
1. Type: Stainless steel core with polymer fabric laminated to the bottom stainless steel face with non-asphalt adhesive. The top face (exposed side) must not be covered with a polymer fabric.
 2. Stainless steel: type 304, ASTM A240. Domestically sourced per DFARS 252.225-7008 and/or DFARS 252.225-7009.
 3. Fabric: polymer fabric; laminated back face (non-exposed side) of stainless steel core.
 4. Size: Manufacturer's standard width rolls.
- C. Accessories:
1. Mastix/sealant: Product standard of quality is York Manufacturing, Inc.; UniverSeal US100.
 - a. Characteristics:
 - 1) Type: One part 100% solids, solvent-free formulated silyl-terminated polyether (STPE), ASTM C920-11, Type S, Grade NS, Class 50.
 2. Outside corner and inside corner material; manufacturer's standard available units using:
 - a. Stainless steel: 26 gauge stainless steel.
 3. End dam: Product may be folded in line with the flashing material or utilize preformed end dams by manufacturer using:
 - a. Stainless steel: 26 gauge stainless steel
 4. Splice material: Product standard of quality is York304 SS by York. Manufacturer's standard self-adhered metal material; material matching system material or use Multi-Flash Stainless Steel 6" lap piece and polyether sealant as a splice.
 5. Termination bar: Product standard of quality is York T-96 termination bar. Manufacturer's standard 1" composite material bar or a 1" 26 gauge stainless steel termination bar with sealant lip.
 6. Repair and other materials/accessories: Manufacturer's standard.
 7. Fasteners: Domestic manufactured fastener types and sizes recommended by flashing manufacturer for intended use.

- D. Application: Unless otherwise indicated, use the following:
1. Where flashing is indicated to receive counterflashing, use metal flashing.
 2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
 3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing with a drip edge.
 4. Where flashing is fully concealed, use flexible flashing.
- E. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from high-density polyethylene incorporating chemical stabilizers that prevent UV degradation. Cell flashing pans have integral weep spouts that are designed to be built into mortar bed joints and weep collected moisture to the exterior of CMU walls and that extend into the cell to prevent clogging with mortar.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Mortar Net USA, Ltd.; Blok-Flash.
 - b. Approved equal.
- F. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neopreneurethane.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Weep/Vent Products: Use the following unless otherwise indicated:
1. Mesh Weep/Vent: "CavClear" non-woven recycled polymer mesh flame-retarant binder and "M" notched bottom as manufactured by Archovations, Inc., Hudson, WI, or equal product of other manufacturer approved in advance by Architect. Color as selected from the full range of manufacturer's colors.
- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Mortar Trap by Hohmann Barnard.
 - b. Mortar Net USA, Ltd.; Mortar Net.

2. Provide one of the following configurations:

- a. Strips, full-depth of cavity and 10 inches high, with dovetail shaped notches 7 inches deep that prevent clogging with mortar droppings.
- F. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
 - b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
 - c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
 - d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.
- G. Control Joints: Premolded rubber Rapid Control Joint products as manufactured by Dur-O-Wal, Inc., or approved equal. Use "regular" flange type at non-exposed walls and No. 8 wide flange type at exposed areas. All units must be used with grooved type blocks.
- H. Premolded Joint Fillers: Premolded joint filler Number G-207-N black, as manufactured by Rubatex Corporation, Bedford, VA; or approved equal. Use for control joints in bond beam units.
- I. Compressible Filler: Compressibel 3/8-inch thick closed cell neoprene material conforming to ASTM D1056 Grade 2A1, "Rapid Soft-Joint/Expansion Control" as manufactured by Dur-O-Wal, Inc.; or approved equal approved by Architect.

2.10 CAVITY-WALL INSULATION

- A. 2" Mineral Wool Insulation. Product to be ROCKWOOL, TM COMFORTBOARD TM 100, Owens Corning, Thermafiber TM, or equal approved by architect through Section 00.2625 Substitution Request Form.
- B. Transition Membranes – Self-Adhered:
 1. Blueskin SA by Henry Company
 2. AirShield by W.R. Meadows
- C. Source Quality Control
 1. Insulation product components produced in an ISO 9001 registered factory.

2.11 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following

- a. Diedrich Technologies, Inc.
- b. EaCo Chem, Inc.
- c. ProSoCo, Inc.

2.12 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use Portland Cement-line mortar unless noted otherwise.
 - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. For masonry below grade or in contact with earth, use Type S.
 - 2. For reinforced masonry, use Type S.
 - 3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
 - 4. For interior non-load-bearing partitions, Type O may be used instead of Type N.
- D. Pigmented Mortar: Use colored cement product. Do not add pigments to colored cement products.
 - 1. Pigments shall not exceed 10 percent of portland cement by weight.
 - 2. Mix to match Architect's sample.
 - 3. Application: Use pigmented mortar for exposed mortar joints with the following units:
 - a. Face brick.
 - b. Limestone trim units.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
 - 1. Mix to match Architect's sample.
 - 2. Application: Use colored aggregate mortar for exposed mortar joints with the following units:
 - a. Face brick.
 - b. Limestone trim units.
- F. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 3000 psi.
3. Provide grout with a slump of 10 to 11 inches as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 1. Mix units from several pallets or cubes as they are placed.
- F. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in bond pattern indicated on Drawings; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
 - 3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
 - 4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078446 "Fire-Resistive Joint Systems."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick and CMUs as follows:
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Lay structural-clay tile as follows:
 - 1. Lay vertical-cell units with full head joints unless otherwise indicated. Provide bed joints with full mortar coverage on face shells and webs.
 - 2. Lay horizontal-cell units with full bed joints unless otherwise indicated. Keep drainage channels, if any, free of mortar. Form head joints with sufficient mortar so excess will be squeezed out as units are placed in position. Butter both sides of units to be placed, or butter one side of unit already in place and one side of unit to be placed.
 - 3. Maintain joint thicknesses indicated except for minor variations required to maintain bond alignment. If not indicated, lay walls with 1/4- to 3/8-inch- thick joints.
 - 4. Where epoxy-mortar pointed joints are indicated, rake out setting mortar to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- D. Set limestone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
 - 1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
 - 2. Allow cleaned surfaces to dry before setting.
 - 3. Wet joint surfaces thoroughly before applying mortar.
- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- F. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.6 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together using one of the following methods:
 - 1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 2.67 sq. ft. of wall area spaced not to exceed 24 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
 - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
 - 2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
 - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties.

3. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not over 8 inches clear horizontally and 16 inches clear vertically.
- B. Bond wythes of composite masonry together using bonding system indicated on Drawings.
- C. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.
- D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
 1. Provide continuity with masonry joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.
- E. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
 1. Provide individual metal ties not more than 16 inches o.c.
 2. Provide continuity with masonry joint reinforcement by using prefabricated T-shaped units.
 3. Provide rigid metal anchors not more than 24 inches o.c. If used with hollow masonry units, embed ends in mortar-filled cores.

3.7 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
 1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 2.67 sq. ft. of wall area spaced not to exceed 24 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
 - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
 - b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.
 2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
 - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties].
 - c. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties to allow for differential movement regardless of whether bed joints align.

3. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not over 8 inches clear horizontally and 16 inches clear vertically.
 4. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Bond wythes of cavity walls together using bonding system indicated on Drawings.
- C. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.
- D. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.8 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
1. Space reinforcement not more than 16 inches o.c.
 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.9 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete where masonry abuts or faces structural steel or concrete to comply with the following:
1. Provide an open space not less than 1 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
 3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.10 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to concrete and masonry backup with seismic masonry-veneer anchors to comply with the following requirements:
1. Embed connector sections and continuous wire in masonry joints. Provide not less than 2 inches of air space between back of masonry veneer and face of sheathing.
 2. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 3. Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than 1 anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.
 4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally with not less than 1 anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.

3.11 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
 2. Install preformed control-joint gaskets designed to fit standard sash block.
 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
 4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
- C. Form expansion joints in brick as follows:
1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
 2. Build flanges of factory-fabricated, expansion-joint units into masonry.
 3. Build in compressible joint fillers where indicated.
 4. Form open joint full depth of brick wythe and of width indicated, but not less than 1/2 inch for installation of sealant and backer rod specified in Section 079200 "Joint Sealants."
- D. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants," but not less than 3/8 inch >.
1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.12 LINTELS

- A. Install steel lintels where indicated.
- B. Provide concrete lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.13 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as per Drawings.
- C. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
 - 1. Use specified weep/vent products to form weep holes.
 - 2. Space weep holes 24 inches o.c. unless otherwise indicated.

3.14 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 60 inches

3.15 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Level 1 special inspections according to the "International Building Code."
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C 67 for compressive strength.
- F. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
- G. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- H. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for mortar air content and compressive strength.
- I. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.
- J. Prism Test: For each type of construction provided, according to ASTM C 1314 at 7 days and at 28 days.

3.16 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in 2 uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a cove at bottom.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.17 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
 - 7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.
 - 8. Clean stone trim to comply with stone supplier's written instructions.
 - 9. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.18 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
 - 1. Crush masonry waste to less than 4 inches in each dimension.
 - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
 - 3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04.2000

SECTION 05.5000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Steel framing and supports for operable partitions.
 - 2. Steel framing and supports for overhead doors and grilles.
 - 3. Steel framing and supports for countertops.
 - 4. Steel framing and supports for mechanical and electrical equipment.
 - 5. Shelf angles.
 - 6. Loose steel lintels.
 - 7. Loose bearing and leveling plates.
 - 8. Steel weld plates and angles for casting into concrete not specified in other Sections.
 - 9. Structural-steel door frames.
 - 10. Miscellaneous steel trim.
 - 11. Metal bollards.
 - 12. Steel framing and supports for applications where framing and supports are not specified in other Sections.
 - 13. Metal Ladders.
- B. Related Sections include the following:
 - 1. Division 3 Section "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, wedge-type inserts and other items indicated to be cast into concrete.
 - 2. Division 4 Section "Unit Masonry Assemblies" for installing loose lintels, anchor bolts, and other items indicated to be built into unit masonry.
 - 3. Division 5 Section "Structural Steel" for structural-steel framing system components.
 - 4. Division 6 Section "Rough Carpentry" for metal framing anchors and other rough hardware.
 - 5. Division 9 Section "Painting and Finishing" for field touch-up pf primer prior to applying finish coats.
 - 6. Divisions 15 and 16 for miscellaneous supports of hangers for equipment, pipes, etc.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Division 1 Section "Submittals."
- B. Product Data:
 - 1. Paint products.
 - 2. Grout.

- C. Shop Drawings: Detail fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
 - D. Mill Certificates: Signed by manufacturers of stainless-steel sheet certifying that products furnished comply with requirements.
 - E. Welding Certificates: Copies of certificates for welding procedures and personnel.
- 1.4 QUALITY ASSURANCE
- A. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1, "Structural Welding Code--Steel."
 - 2. AWS D1.2, "Structural Welding Code--Aluminum."
- 1.5 PROJECT CONDITIONS
- A. Field Measurements: Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- 1.6 COORDINATION
- A. Coordinate installation of anchorages for metal fabrications. 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.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

- A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

2.2 FERROUS METALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Steel W-Shapes: ASTM A992.
- C. Steel Plates, Shapes, and Bars: ASTM A 36.
- D. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304.

- E Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.
- F Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
- G Malleable-Iron Castings: ASTM A 47, Grade 32510 (ASTM A 47M, Grade 22010).
- H Cast-in-Place Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials capable of sustaining, without failure, the load imposed within a safety factor of 4, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 malleable iron or ASTM A 27 cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153.
- I Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.3 ALUMINUM

- A Aluminum Extrusions and Pipe: ASTM B 221, alloy 6063-T6.

2.4 PAINT

- A Shop Primer for Ferrous Metal: Modified alkyd rust inhibitive primer, complying with SSPC-Paint 20 and compatible with topcoat.
 - 1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. 1069 Primer; Rust-Oleum Corporation.
 - b. Tnemec Primer 10-99;
 - c. Or alternatives of the quality necessary to meet the specifications.
- B Galvanizing Repair Paint: High-zinc-dust-content paint for reglazing welds in steel, complying with SSPC-Paint 20.

2.5 FASTENERS

- A General: Provide Type 304 or 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, where built into exterior walls. Select fasteners for type, grade, and class required.
- B Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A, Property Class 4.6; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C Anchor Bolts: ASTM F 1554, Grade 36.
- D Machine Screws: ASME B18.6.3.

- E. Lag Bolts: ASME B18.2.1.
- F. Wood Screws: Flat head, carbon steel, ASME B18.6.1.
- G. Plain Washers: Round, carbon steel, ASME B18.22.1.
- H. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1.
- I. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material: Alloy Group 1 or 2 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.
- J. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as needed.

2.6 GROUT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 CONCRETE FILL

- A. Concrete Materials and Properties: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.

2.8 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Shear and punch metals cleanly and accurately. Remove burrs.
- C. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.

- 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
 - E. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
 - F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
 - G. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.
 - H. Allow for thermal movement resulting from change in ambient and surface temperatures by preventing buckling, opening up of joints, overstressing of components, 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.
 - I. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
 - J. Remove sharp or rough areas on exposed traffic surfaces.
 - K. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
- 2.9 LOOSE BEARING AND LEVELING PLATES
- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
 - B. Galvanize plates after fabrication.
- 2.10 LOOSE STEEL LINTELS
- A. Fabricate loose structural-steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
 - B. Weld adjoining members together to form a single unit where indicated.
 - C. Size loose lintels to provide bearing length at each side of openings equal to one-twelfth of clear span, but not less than 8 inches, unless otherwise indicated.
 - D. Galvanize loose steel lintels located in exterior walls.
- 2.11 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports that are not a part of structural-steel framework as necessary to complete the Work.
- B. Fabricate units from structural-steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors 1-1/4 inches wide by 1/4 inch thick by 8 inches long at 24 inches on center, unless otherwise indicated.
 - 2. Furnish inserts if units must be installed after concrete is placed.
- C. Galvanize miscellaneous framing and supports where indicated.

2.12 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from structural-steel shapes, plates, and bars of profiles shown with continuously welded joints, and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work. Provide anchors, welded to trim, for embedding in concrete or masonry construction, spaced not more than 6 inches from each end, 6 inches from corners, and 24 inches on center, unless otherwise indicated.
- C. Galvanize exterior use miscellaneous steel trim.

2.13 METAL LADDERS

- A. General:
 - 1. Comply with ANSI A14.3.
- B. Steel Ladders:
 - 1. Space siderails 16-inches apart unless otherwise indicated.
 - 2. Siderails: Continuous, 3/8-by-2-1/2-inch steel flat bars, with eased edges.
 - 3. Rungs: 3/4-inch square steel bars.
 - 4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
 - 5. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
 - 6. Support each ladder at top and bottom and not more than 60-inches o.c. with welded or bolted steel brackets.
 - 7. Prime ladders, including brackets and fasteners, with zinc-rich primer.

2.14 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

- B. Finish metal fabrications after assembly.

2.15 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
 - 1. ASTM A 123, for galvanizing steel and iron products.
 - 2. ASTM A 153, for galvanizing steel and iron hardware.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements for SSPC surface-preparation specifications and environmental exposure conditions of installed metal fabrications.
- C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting.

2.16 STAINLESS-STEEL FINISHES

- A. Remove tool and die marks and stretch lines or blend into finish.
- B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
- C. Polish below is usual stainless-steel finish and references standard sheet finish designation. Revise if another finish is required.
- D. Bright, Directional Polish: No. 4 finish.
- E. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2.17 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Class I, Clear Anodic Finish: AA-M12C22A41 Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker complying with AAMA 607.1.

PART 3 - EXECUTION

3.1 COORDINATION

- A. This fabricator shall secure and be responsible for all field measurements required for the proper and accurate fabrication and installation of the items included in this Section. Field alterations will not be permitted, except upon specific authorization of the Architect.

- B. Coordinate with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.2 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- E. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.
- G. Install pipe railings and handrails at walls and stairs unless otherwise indicated or approved by the Architect in accordance with the following:
 - 1. Provide cast brackets having 2 ¼ inch minimum clearance between railing and wall;
 - 2. Return handrail ends to within 1/2 inches of wall;
 - 3. Secure to wall with approved fasteners.
 - 4. Weld guard rails to stringers as indicated on the Drawings;
 - 5. At top and bottom of stairs and ramps continue handrail 24 inches past first and last riser. Return ends to within ½-inch of wall.

3.3 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

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

3.4 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Section "Painting and Finishing."
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 05 51 19 – METAL GRATING STAIRS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Industrial Class stairs with steel-grating treads.
2. Steel railings and guards attached to metal stairs.
3. Steel handrails attached to walls adjacent to metal stairs.

1.2 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for metal stairs, railings, and guards.
1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, blocking for attachment of wall-mounted handrails, and items with integral anchors, that are to be embedded in concrete or masonry.
 2. Deliver such items to Project site in time for installation.
- C. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.
- D. Schedule installation of railings and guards so wall attachments are made only to completed walls.
1. Do not support railings and guards temporarily by any means that do not satisfy structural performance requirements.

1.3 ACTION SUBMITTALS

A. Product Data: For metal grating stairs and the following:

1. Gratings.
2. Woven-wire mesh.
3. Welded-wire mesh.
4. Shop primer products.
5. Grout.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachment to other work.
 2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
 3. Include plan at each level.
 4. Indicate locations of anchors, weld plates, and blocking for attachment of wall-mounted handrails.
- C. Delegated-Design Submittal: For stairs, railings, and guards, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the State in which Project is located.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification.
1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
 2. Protect steel members and packaged materials from corrosion and deterioration.
 3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.
 - a. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design stairs, railings, and guards, including attachment to building construction.

- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Uniform Load: 100 lbf/sq. ft. (4.79 kN/sq. m).
 2. Concentrated Load: 300 lbf (1.33 kN) applied on an area of 4 sq. in. (2580 sq. mm).
 3. Uniform and concentrated loads need not be assumed to act concurrently.
 4. Stair Framing: Capable of withstanding stresses resulting from railing and guard loads in addition to loads specified above.
 5. Limit deflection of treads, platforms, and framing members to L/360.
- C. Structural Performance of Railings and Guards: Railings and guards, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) 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 (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
 - b. Infill load and other loads need not be assumed to act concurrently.
 3. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 METALS

- A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Rolled-Steel Floor Plate: ASTM A786/A786M, rolled from plate complying with ASTM A36/A36M or ASTM A283/A283M, Grade C or D.
- D. Steel Bars for Grating Treads: ASTM A36/A36M or steel strip, ASTM A1011/A1011M or ASTM A1018/A1018M.
- E. Steel Wire Rod for Grating Crossbars: ASTM A510/A510M.
- F. Aluminum Bars for Grating Treads: ASTM B221 (ASTM B221M) extruded aluminum, alloys as follows:

1. 6061-T6 or 6063-T6, for bearing bars of gratings and shapes.
 2. 6061-T1, for grating crossbars.
- G. Steel Tubing for Railings and Guards: ASTM A500/A500M (cold formed).
1. Provide galvanized finish for exterior installations and where indicated.
- H. Steel Pipe for Railings and Guards: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- I. Provide galvanized finish for exterior installations and where indicated.
- J. Welded-Wire Mesh: Square pattern, 2-inch (50-mm) welded-wire mesh, made from 0.236-inch (6.0-mm) nominal-diameter steel wire complying with ASTM A510/A510M.
- K. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.
- L. Cast-Abrasive Nosings: Cast iron, with an integral abrasive, as-cast finish consisting of aluminum oxide, silicon carbide, or a combination of both.

2.3 FASTENERS

- A. General: Provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5 where built into exterior walls.
1. Select fasteners for type, grade, and class required.
- B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated[and capable of withstanding design loads].
- C. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.
- D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.
1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for exterior stairs.
- E. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.
1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.4 MISCELLANEOUS MATERIALS

- A. Welding Electrodes: Comply with AWS requirements.
- B. Shop Primers: Provide primers that comply with Section 099100 Painting.
- C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- D. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- F. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior and exterior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, railings, guards, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
 - 1. Join components by welding unless otherwise indicated.
 - 2. Use connections that maintain structural value of joined pieces.
- B. Assemble stairs, railings, and guards in shop to greatest extent possible.
 - 1. Disassemble units only as necessary for shipping and handling limitations.
 - 2. Clearly mark units for reassembly and coordinated installation.
- C. Cut, drill, and punch metals cleanly and accurately.
 - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated.
 - 2. Remove sharp or rough areas on exposed surfaces.
- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Form exposed work with accurate angles and surfaces and straight edges.
- F. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #4 - Good quality, uniform undressed weld with minimal splatter.
- G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
 2. Locate joints where least conspicuous.
 3. Fabricate joints that are exposed to weather in a manner to exclude water.
 4. Provide weep holes where water may accumulate internally.

2.6 FABRICATION OF STEEL-FRAMED STAIRS

- A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Industrial Class, unless more stringent requirements are indicated.
- B. Stair Framing:
1. Fabricate stringers of steel plates or channels.
 - a. Stringer Size: As indicated on Drawings.
 - b. Provide closures for exposed ends of channel stringers.
 - c. Finish: Galvanized.
 2. Construct platforms and tread supports of steel plate or channel headers and miscellaneous framing members as indicated on Drawings.
 - a. Provide closures for exposed ends of channel framing.
 - b. Finish: Galvanized.
 3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers.
 4. Where stairs are enclosed by gypsum board assemblies, provide hanger rods or struts to support landings from floor construction above or below.
 - a. Locate hanger rods and struts where they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.
 5. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.
- C. Metal Bar-Grating Stairs: Form treads and platforms to configurations shown from metal bar grating; fabricate to comply with NAAMM MBG 531, "Metal Bar Grating Manual."

1. Fabricate treads and platforms from welded steel or pressure-locked steel grating with 1-by-1/8-inch (25-by-3-mm) bearing bars at 7/16 inch (11 mm) o.c. and crossbars at 4 inches (100 mm) o.c.
 2. Fabricate treads and platforms from welded steel or pressure-locked steel] grating with openings in gratings no more than inch (25 mm) in least dimension.
 - a. Surface: Serrated.
 - b. Finish: Mill.
 3. Fabricate grating treads with rolled-steel floor plate cast-abrasive nosing and with steel angle or steel plate carrier at each end for stringer connections.
 - a. Secure treads to stringers with bolts.
 4. Fabricate grating platforms with nosing matching that on grating treads.
 - a. Secure grating to platform framing with bolts.
- D. Risers: Solid.
- E. Toe Plates: Provide toe plates around openings and at edge of open-sided floors and platforms, and at open ends and open back edges of treads.
1. Material and Finish: Steel plate to match finish of other steel items.
 2. Fabricate to dimensions and details indicated.

2.7 FABRICATION OF STAIR RAILINGS AND GUARDS

- A. Comply with applicable requirements in Section 055213 "Pipe and Tube Railings."

2.8 FINISHES

- A. Finish metal stairs after assembly.
- B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
1. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
 2. 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.
- C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed products:
1. Interior Stairs: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 2. Interior Stairs: SSPC-SP 3, "Power Tool Cleaning."

- D. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.
 - 1. For wall-mounted railings, verify locations of concealed reinforcement within gypsum board and plaster assemblies.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF METAL STAIRS

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.
 - 1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.
- D. Fit exposed connections accurately together to form hairline joints.
 - 1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
 - 2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
 - 3. Comply with requirements for welding in "Fabrication, General" Article.

3.3 INSTALLATION OF RAILINGS AND GUARDS

- A. Adjust railing and guard systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.
 - 1. Space posts at spacing indicated or, if not indicated, as required by design loads.

2. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
 3. Align rails and guards so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).
 4. Secure posts, rail ends, and guard ends to building construction as follows:
 - a. Anchor posts to steel by welding or bolting to steel supporting members.
 - b. Anchor handrail and guard ends to concrete and masonry with steel round flanges welded to rail and guard ends and anchored with post-installed anchors and bolts.
- B. Attach handrails to wall with wall brackets.
1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
 2. Secure wall brackets to building construction as follows:
 - a. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - b. For hollow masonry anchorage, use toggle bolts.
 - c. 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.
 - d. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION

DIVISION 5- METAL RAILINGS
SECTION 05 52 00- RAILINGS AND BARRIERS

2.1 SCOPE OF WORK

The Contractor shall provide all necessary materials, labor, tools, equipment, and services necessary to install the pipe railings and barrier as shown on the plans and detail drawings.

2.2 SUBMITTALS

- A. Shop Drawings: Layout of railings with dimensions, details, finishes of components, accessories.
- B. Samples: Color selections for polyester powder coat finishes.

2.3 MATERIALS

- A. Hand Railings and barrier as Manufactured by:
Metalco, Inc. or equal
40 North Tower Road
Oak Brook, IL
(800) 708-2526
- B. Railing Height: 36"
- C. Barrier Height: 48"
- D. Posts: Vert. elements 1-1/2 dia. Schedule 40 aluminum pipe.
- E. Rails: Horiz. elements 1-1/2" dia. Schedule 40 aluminum pipe.
- F. Pickets: 1" dia, Schedule 40 aluminum pipe.
- G. Color: Bronze, Polyester Powder Coat, ASTM B 3363, D2793

2.4 EXECUTION

- A. The Contractor shall furnish shop drawings detailing specifications, finish, fabrication, assembly, and installation. The railing shall be installed as per detail drawings. All materials shall be as specified. Concrete footings shall be as described under concrete section.
- B. Install two (2) sets of new posts and railings along each side of the concrete stairs and asphalt ramp, as indicated in the plan detail drawings, except for the area adjacent to the wall, where a barrier will be installed in accordance with the detail drawings.
- C. The ADA-compliant barrier shall terminate at the wall end, where railings will be installed. A handrail, as specified in the detail drawings, shall be installed along the barrier with a 2.5-inch projection and securely attached or welded every four (4) feet using 1 1/2-inch aluminum pipe.
- D. Posts shall be installed/fastened in concrete paving according to the Concrete Paving Specification.
- E. Railing shall extend 12" beyond the edge of steps and ramps.
- F. Erect work plumb, square and level, free from distortion or defects detrimental to appearance or performance.

SECTION 05 21 13 – PIPE AND TUBE RAILINGS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel pipe and tube railings.
- B. Related Requirements:
 - 1. Section 055119 "Metal Grating Stairs" for steel tube railings associated with metal grating stairs.

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. Handrail brackets.
 - 3. Shop primer.
 - 4. Intermediate coats and topcoats.
 - 5. Bituminous paint.
 - 6. Nonshrink, nonmetallic grout.
 - 7. Anchoring cement.
 - 8. Paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. 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 delegated-design professional engineer.
- B. Welding certificates.
- C. Product Test Reports: For tests on railings performed by a qualified testing agency, in accordance with ASTM E894 and ASTM E935.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with 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 MANUFACTURERS

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

2.2 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.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) 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 (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
 - b. Infill load and other loads need not be assumed to act concurrently.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F.

2.3 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 or predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.4 STEEL AND IRON

- A. Tubing: ASTM A500/A500M (cold formed).
- B. Pipe: ASTM A53/A53M, 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 A36/A36M.
- D. Stainless Steel Shapes: ASTM A276, Type 304, Brushed No. 4 finish.
- E. Cast Iron Fittings: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.
- F. Woven-Wire Mesh Infill Panels: Intermediate-crimp, square pattern, 2-inch (50-mm) woven-wire mesh, made from 0.134-inch- (3.42-mm-) diameter steel wire complying with ASTM A510 (ASTM A510M).
 - 1. Basis-of-Design Product: Provide product with crimp pattern matching product indicated on Drawings.

2.5 FASTENERS

A. Fastener Materials:

1. Ungalvanized-Steel Railing Components: Plated steel fasteners complying with ASTM F1941 (ASTM F1941M), Class Fe/Zn 5 for zinc coating.
2. Hot-Dip Galvanized Railing Components: Type 304 stainless steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329/F2329M for zinc coating.
3. Finish exposed fasteners to match 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 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 exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
2. 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.

2.6 MISCELLANEOUS MATERIALS

A. Handrail Brackets: Cast stainless steel, center of handrail at distance as indicated on Drawings.

B. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded.

1. For aluminum and stainless steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

C. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

D. Galvanizing Repair Paint: High-zinc-dust-content paint, complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- F. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- G. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- H. Intermediate Coats and Topcoats: Provide products that comply with Section 099100 Painting.
- I. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout, complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- J. 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 on Drawings, 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.

2.7 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 welded 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. Form Changes in Direction as Follows:
1. As detailed.
 2. By bending or by inserting prefabricated elbow fittings.
- J. 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.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. 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.
- M. 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.
- N. 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.
- O. For railing posts set in concrete, provide steel sleeves for steel railings and stainless-steel sleeves for aluminum railings 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.
- P. Toe Boards: Provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

2.8 STEEL AND IRON FINISHES

- A. Galvanized Railings:
1. Hot-dip galvanize exterior and indicated steel railings, including hardware, after fabrication.
 2. Comply with ASTM A123/A123M for hot-dip galvanized railings.
 3. Comply with ASTM A153/A153M for hot-dip galvanized hardware.
- 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 and as follows.

1. Comply with SSPC-SP 16.
- D. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, hot-dip galvanize anchors to be embedded in exterior concrete or masonry.
- E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3. "Commercial Blast Cleaning".
- F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1 for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
 1. Shop prime uncoated railings with universal shop primer.
 2. Do not apply primer to galvanized surfaces.

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. Perform cutting, drilling, and fitting required for installing railings.
 1. Fit exposed connections together to form tight, hairline joints.
 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 4. 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.
 5. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
 6. 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 (6 mm in 3.5 m).
- B. 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 concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- C. 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 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. 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 nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- C. Leave anchorage joint exposed with anchoring material flush with adjacent surface.
- D. 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 steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

3.4 ATTACHING RAILINGS

- A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends.
- B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends.
- C. 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.
- D. 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 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.

3.5 CLEANING

- A. Clean stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.

Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION

SECTION 06.1000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Framing with dimension lumber.
 - 2. Framing with engineered wood products.
 - 3. Shear wall panels.
 - 4. Rooftop equipment bases and support curbs.
 - 5. Wood blocking and nailers.
 - 6. Wood furring.
 - 7. Wood sleepers.
 - 8. Plywood backing panels.

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
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

1.3 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
 - 1. Wood-preservative-treated wood.
 - 2. Fire-retardant-treated wood.
 - 3. Engineered wood products.
 - 4. Shear panels.
 - 5. Power-driven fasteners.
 - 6. Powder-actuated fasteners.
 - 7. Expansion anchors.
 - 8. Metal framing anchors.

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 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. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
- C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
 - 1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWP A 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. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
 - 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.

4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

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 (3.2 m) beyond the centerline of the burners at any time during the test.
 1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
 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. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat items indicated on Drawings,

2.4 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.
 1. Application: as indicated on drawings.
 2. Species:
 - a. Mixed southern pine; SPIB.
 - b. Northern species; NLGA.
 - c. Eastern softwoods; NeLMA.
- B. Framing Other Than Non-Load-Bearing Interior Partitions: No. 2 grade.
 1. Application: Framing other than interior partitions.
 2. Species:
 - a. Hem-fir (north); NLGA.

- b. Southern pine; SPIB.
- c. Douglas fir-larch; WCLIB or WWP.
- d. Spruce-pine-fir; NLGA.

2.5 ENGINEERED WOOD PRODUCTS

- A. Engineered Wood Products, General: Products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
 - 1. Extreme Fiber Stress in Bending, Edgewise: As indicated on the structural drawings.
 - 2. Modulus of Elasticity, Edgewise: As indicated on the structural drawings.

2.6 SHEAR WALL PANELS

- A. Wood-Framed Shear Wall Panels: Prefabricated assembly consisting of wood perimeter framing, tie downs, and Exposure I, Structural I plywood or OSB sheathing.

2.7 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Rooftop equipment bases and support curbs.
 - 4. Cants.
 - 5. Furring.
 - 6. Grounds.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of any species.
- C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine; No.2 grade; SPIB.
 - 2. Eastern softwoods; No. 2 Common grade; NeLMA.
 - 3. Northern species; No. 2 Common grade; NLGA.
 - 4. Western woods; Construction or No. 2 Common grade; WCLIB or WWP.

2.8 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged], in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm)] nominal thickness.

2.9 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Power-Driven Fasteners: NES NER-272.
- C. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.10 METAL FRAMING ANCHORS

- 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:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:
 - 1. Simpson Strong-Tie Co., Inc.
- C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.
 - 1. Use for wood-preservative-treated lumber and where indicated.

2.11 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.

- B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- C. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, 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 (0.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate **furring**, nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.
- E. Shear Wall Panels: Install shear wall panels to comply with manufacturer's written instructions.
- F. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- G. Do not splice structural members between supports unless otherwise indicated.
- H. Comply with AWPAC M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- I. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- J. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
 - 3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

3.2 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

3.3 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION 06.1000

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SECTION 06.1600 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wall sheathing.
 - 2. Roof sheathing.
 - 3. Composite nail base insulated roof sheathing.
 - 4. Subflooring.
 - 5. Underlayment.
 - 6. Sheathing joint and penetration treatment.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

1.3 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For following products, from ICC-ES:
 - 1. Preservative-treated plywood.
 - 2. Fire-retardant-treated plywood.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory."

2.2 WOOD PANEL PRODUCTS

1. Plywood.
 2. Oriented strand board.
 3. Particleboard underlayment.
 4. Hardboard underlayment.
- B. Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.
- C. Oriented Strand Board: DOC PS 2.

2.3 PRESERVATIVE-TREATED PLYWOOD

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction, Use Category UC3b for exterior construction.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

- 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 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 (3.2 m) beyond the centerline of the burners at any time during the test.
1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
 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. Use where exterior type is not indicated.
 3. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D 5516 and design value adjustment factors shall be calculated according to ASTM D 6305. Span ratings after treatment shall be not less than span ratings specified. For roof sheathing and where high-temperature fire-retardant treatment is indicated, span ratings for temperatures up to 170 deg F (76 deg C) shall be not less than span ratings specified.

- C. Kiln-dry material after treatment to a maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

2.5 WALL SHEATHING

- A. Plywood Wall Sheathing: Exterior, Structural 1 sheathing.
 - 1. Span Rating: Not less than 32/16.
 - 2. Nominal Thickness: As indicated on drawings but not less than 1/2 inch (13 mm).

2.6 ROOF SHEATHING

- A. Plywood Roof Sheathing: Exterior, Structural 1 sheathing.
 - 1. Span Rating: Not less than 48/24.
 - 2. Nominal Thickness: Not less than 3/4 inch (19 mm)].

2.7 SUBFLOORING AND UNDERLAYMENT

- A. Plywood Combination Subfloor-Underlayment: DOC PS 1, Exposure 1, Structural I, Underlayment single-floor panels.
- B. Oriented-Strand-Board Combination Subfloor-Underlayment: Exposure 1 single-floor panels.
- C. Plywood Subflooring: Exterior, Structural I single-floor panels or sheathing.
- D. Oriented-Strand-Board Subflooring: Exposure 1, Structural I sheathing.
- E. Plywood Subflooring for Resilient Flooring: DOC PS 1, Exposure 1 Underlayment with fully sanded face.
- F. Plywood Underlayment for Ceramic Tile: DOC PS 1, Exterior, C-C Plugged, not less than 5/8-inch (15.9-mm) nominal thickness, for ceramic tile set in latex-portland cement mortar.
- G. Plywood Underlayment for Carpet: DOC PS 1, Interior, Underlayment.

2.8 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
 - 2. Nails, Brads, and Staples: ASTM F 1667.

3. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
4. Screws for Fastening Sheathing to Wood Framing: ASTM C 1002.

2.9 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
 1. NES NER-272 for power-driven fasteners.
 2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
- D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 1. Combination Subfloor-Underlayment:
 - a. Nail to wood framing.
 - b. Space panels 1/8 inch (3 mm) apart at edges and ends.
 2. Subflooring:

- a. Nail or staple to wood framing.
 - b. Space panels 1/8 inch (3 mm) apart at edges and ends.
- 3. Wall and Roof Sheathing:
 - a. Nail or staple] to wood framing.
 - b. Space panels 1/8 inch (3 mm) apart at edges and ends.
- 4. Underlayment:
 - a. Nail or staple to subflooring.
 - b. Space panels 1/32 inch (0.8 mm) apart at edges and ends.
 - c. Fill and sand edge joints of underlayment receiving resilient flooring immediately before installing flooring.

END OF SECTION 06.1600

SECTION 06.1753 - SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wood roof trusses.
 - 2. Wood girder trusses.
 - 3. Wood truss bracing.
 - 4. Metal truss accessories.
- B. Allowances: Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Section 01.2100 "Allowances."

1.2 ACTION SUBMITTALS

- A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.
- B. Shop Drawings: Show fabrication and installation details for trusses.
 - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
 - 2. Indicate sizes, stress grades, and species of lumber.
 - 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
 - 4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
 - 5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
 - 6. Show splice details and bearing details.
- C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Evaluation Reports: For the following, from ICC-ES:
 - 1. Metal-plate connectors.
 - 2. Metal truss accessories.

1.4 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
 - 1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
 - 2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Comply with applicable requirements and recommendations of the following publications:
 - 1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
 - 2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."
 - 3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."
- D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store trusses to comply with recommendations in TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.
- B. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
 - 1. Design Loads: As indicated on the Structural Documents.
 - 2. Maximum Deflection Under Design Loads:
 - a. Roof Trusses: As indicated on the Structural Documents.
 - b. Floor Trusses: As indicated on the Structural Documents.

2.2 DIMENSION LUMBER

- A. Certified Wood: For metal-plate-connected wood trusses and permanent bracing, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- B. 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 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. Provide dry lumber with 15 percent maximum moisture content at time of dressing.
- C. Grade and Species: For truss chord and web members, provide dimension lumber of any species, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."
- D. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 06.1000 Rough Carpentry.

2.3 METAL CONNECTOR PLATES

- 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. Alpine Engineered Products, Inc.; an ITW company.
 - 2. Cherokee Metal Products, Inc.; Masengill Machinery Company.
 - 3. CompuTrus, Inc.
 - 4. Eagle Metal Products.
 - 5. Jager Building Systems, Inc.; a Tembec/SGF Rexfor company.
 - 6. MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.
 - 7. Robbins Engineering, Inc.
 - 8. Truswal Systems Corporation; an ITW company.
- B. General: Fabricate connector plates to comply with TPI 1.
- C. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.

2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.

2.5 METAL FRAMING ANCHORS AND ACCESSORIES

- 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:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:
 1. Cleveland Steel Specialty Co.
 2. KC Metals Products, Inc.
 3. Phoenix Metal Products, Inc.
 4. Simpson Strong-Tie Co., Inc.
 5. USP Structural Connectors.
- C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

2.6 FABRICATION

- A. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- B. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- F. Securely connect each truss ply required for forming built-up girder trusses.
- G. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
 - 1. Install bracing to comply with Section 061000 "Rough Carpentry.
 - 2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- H. Install wood trusses within installation tolerances in TPI 1.
- I. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- J. Replace wood trusses that are damaged or do not meet requirements.

END OF SECTION 06.1753

SECTION 066400 – REINFORCED PLASTIC PANELING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes plastic sheet paneling.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For plastic paneling and trim accessories.
- C. Detail Drawings: Mounting details with appropriate adhesives for specific project substrates.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened factory packaging to the jobsite
- B. Inspect materials at delivery to assure that specified products have been received.
- C. Store in original packaging in a climate controlled location away from direct sunlight.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of paneling and trim accessories from single manufacturer for a complete installation.

2.2 PLASTIC WALL PROTECTION WP-01

- A. Rigid Sheet Wall Protection: Rigid 4'x8' vinyl panels.
 - 1. 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:
 - a. Marlite.
 - b. InPro Corporation.
 - c. Nudo Products, Inc.

2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E 84. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: (FSI) (ASTM E84) - 20 (Class 1) (Class A) or less.
 - b. Smoke-Developed Index: 450 or less.
 3. Nominal Thickness: Not less than 0.060 inch.
 4. Surface Finish: Smooth
 5. Color: Refer to Interior Design Selection Summary on Drawings.
- B. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners and caps as needed to conceal edges and provide complete installation.
1. Color: Match Panel.
- C. Adhesive: As recommended by paneling manufacturer.
1. Verify adhesives have a VOC content of 50 g/L or less.
- D. Sealant: Mildew-resistant, single-component, neutral-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 079200 "Joint Sealants."
1. Verify sealant has a VOC content of 250 g/L or less.

2.3 PLASTIC SHEET PANELING FRP-01

- A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D 5319. Panels shall be USDA accepted for incidental food contact.
1. 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:
 - a. Crane Composites, Inc.
 - b. Glasteel.
 - c. Marlite.
 - d. Newcourt, Inc.
 - e. Nudo Products, Inc.
 - f. Parkland Plastics, Inc.
 2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E 84. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: (FSI) (ASTM E84) - 20 (Class 1) (Class A) or less.
 - b. Smoke-Developed Index: 450 or less.
 3. Nominal Thickness: Not less than 0.10 inch.
 4. Surface Finish: Smooth
 5. Color: Refer to Interior Design Selection Summary on Drawings .

- B. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners and caps as needed to conceal edges.
 - 1. Color: Match Panel.
- C. Adhesive: As recommended by plastic paneling manufacturer.
 - 1. Verify adhesives have a VOC content of 50 g/L or less.
- D. Sealant: Mildew-resistant, single-component, neutral-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 079200 "Joint Sealants."
 - 1. Verify sealant has a VOC content of 250 g/L or less.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.
- B. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
- C. Lay out paneling before installing. Locate panel joints to provide equal panels at ends of walls not less than half the width of full panels so that trimmed panels at corners are not less than 12 inches wide.

3.2 INSTALLATION

- A. Install plastic paneling according to manufacturer's written instructions.
- B. Install panels in a full spread of adhesive.
- C. Install trim accessories with adhesive .
- D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.
- E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.
- F. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION

SECTION 06.1753 - SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wood roof trusses.
 - 2. Wood girder trusses.
 - 3. Wood truss bracing.
 - 4. Metal truss accessories.
- B. Allowances: Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Section 01.2100 "Allowances."

1.2 ACTION SUBMITTALS

- A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.
- B. Shop Drawings: Show fabrication and installation details for trusses.
 - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
 - 2. Indicate sizes, stress grades, and species of lumber.
 - 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
 - 4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
 - 5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
 - 6. Show splice details and bearing details.
- C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Evaluation Reports: For the following, from ICC-ES:
 - 1. Metal-plate connectors.
 - 2. Metal truss accessories.

1.4 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
 - 1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
 - 2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Comply with applicable requirements and recommendations of the following publications:
 - 1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
 - 2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."
 - 3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."
- D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store trusses to comply with recommendations in TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.
- B. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
 - 1. Design Loads: As indicated on the Structural Documents.
 - 2. Maximum Deflection Under Design Loads:
 - a. Roof Trusses: As indicated on the Structural Documents.
 - b. Floor Trusses: As indicated on the Structural Documents.

2.2 DIMENSION LUMBER

- A. Certified Wood: For metal-plate-connected wood trusses and permanent bracing, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- B. 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 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. Provide dry lumber with 15 percent maximum moisture content at time of dressing.
- C. Grade and Species: For truss chord and web members, provide dimension lumber of any species, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."
- D. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 06.1000 Rough Carpentry.

2.3 METAL CONNECTOR PLATES

- 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. Alpine Engineered Products, Inc.; an ITW company.
 - 2. Cherokee Metal Products, Inc.; Masengill Machinery Company.
 - 3. CompuTrus, Inc.
 - 4. Eagle Metal Products.
 - 5. Jager Building Systems, Inc.; a Tembec/SGF Rexfor company.
 - 6. MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.
 - 7. Robbins Engineering, Inc.
 - 8. Truswal Systems Corporation; an ITW company.
- B. General: Fabricate connector plates to comply with TPI 1.
- C. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.

2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.

2.5 METAL FRAMING ANCHORS AND ACCESSORIES

- 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:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:
 1. Cleveland Steel Specialty Co.
 2. KC Metals Products, Inc.
 3. Phoenix Metal Products, Inc.
 4. Simpson Strong-Tie Co., Inc.
 5. USP Structural Connectors.
- C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

2.6 FABRICATION

- A. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- B. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- F. Securely connect each truss ply required for forming built-up girder trusses.
- G. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
 - 1. Install bracing to comply with Section 061000 "Rough Carpentry.
 - 2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- H. Install wood trusses within installation tolerances in TPI 1.
- I. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- J. Replace wood trusses that are damaged or do not meet requirements.

END OF SECTION 06.1753

SECTION 071000 – DAMPPROOFING AND WATERPROOFING

PART 1– GENERAL

1.1 SECTION INCLUDES

- A. Fluid-applied dampproofing.
- B. Fluid-applied waterproofing.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete
- B. Section 04 20 00 - Unit Masonry.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM C836 - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
 - 2. ASTM D412 - Tests for Rubber Properties in Tension
 - 3. ASTM D1187 - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
 - 4. ASTM D1227 - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
 - 5. ASTM D4479 - Standard Specification for Asphalt Roof Coatings - Asbestos-Free.
 - 6. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
 - 7. ASTM E96 - Water Vapor Transmission of Materials.
- B. Federal Specifications:
 - 1. MIL-R-3472 Roof Coating, Asphalt Base Emulsion.
 - 2. SS-A-694 Asphalt Roof Coating (Brushing & Spraying Consist).
 - 3. SS-C-153 - Cement, Bituminous, Plastic.
 - 4. SS-R-1781 - Roof-Coating, Asphalt-Base Emulsion.
 - 5. SS-W-110 - Water-Repellent Colorless, Silicone Resin Base.
- C. National Standard of Canada 37.58 - M86.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Warranty: Submit a sample warranty identifying the terms and conditions stated in Warranty article.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Applicator shall be experienced in applying the same or similar materials.
- B. Regulatory Requirements: Comply with applicable codes, regulations, ordinances, and laws regarding use and application of products that contain volatile organic compounds (VOC).

1.6 PRE-INSTALLATION MEETINGS

- A. Pre-Installation Conference: Prior to beginning work, convene a conference to review conditions, installation procedures, schedules and coordination with other work.
- B. Convene minimum two weeks prior to starting work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original, factory-sealed, unopened containers bearing manufacturer's name and label intact and legible with following information.
 - 1. Name of material.
 - 2. Manufacturer's stock number and date of manufacture.
- B. Store materials in protected and well ventilated area. Handle materials to avoid damage.

1.8 PROJECT CONDITIONS

- A. Do not apply when surface temperature or weather conditions conflict with manufacturer's published requirements.
- B. Coordinate waterproofing work with other trades.
- C. Keep flammable products away from spark or flame. Do not allow the use of spark producing equipment during application and until all vapors have dissipated. Post "NO SMOKING" signs.
- D. Maintain work area in a neat and orderly condition, removing empty containers, rags, and rubbish daily from the site.

1.9 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

- A. Warranty: Provide manufacturer's standard limited material warranty.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. KARNAK Corporation.
 - 2. BASF Corporation; Construction Systems.
 - 3. W. R. Meadows, Inc.
 - 4. Grace Construction Products.
 - 5. Carlisle Coatings & Waterproofing, Inc.
 - 6. Henry Company.
 - 7. Tamko Building Products, Inc.
- B. Requests for substitutions will be considered in accordance with Division 01 provisions as established by Construction Manager.

2.2 DAMPPROOFING

- A. Non-Fibered Emulsion Dampproofing: Brush or spray applied, general purpose coating. Manufactured with refined asphalt, emulsifiers and selected clay fillers.
 - 1. Dries to a tough, flexible, durable finish and will resist extreme variations in temperature and weather.
 - 2. Low odor coating.
 - 3. May be applied to damp surfaces.
 - 4. ASTM D1227, Type III.
 - 5. ASTM D1187, Type II.
 - 6. SS-R-1781.
 - 7. MIL-R-3472A.
 - 8. Coverage Rate: 2 to 3 gallons per 100 square feet.
 - 9. Solids by Weight: 54 to 58 percent, nominal.
 - 10. Solids by Volume: 56 to 60 percent, nominal.
 - 11. Color: Black.
 - 12. Permeance: 0.5 perms.
 - 13. Cure Time: 24 to 48 hours at 77 degrees F and 50 percent Relative Humidity.
 - 14. Service Temperature (Cured Film): -40 to 180 degrees F.
 - 15. Reference: 100AF by KARNAK Corporation.
 - 16. Fabric Reinforcing: Reference: Karnak #31 Fiber Glass Membrane.

2.3 WATERPROOFING

- A. Single component, elastomeric waterproofing membrane, polyurethane with bitumen modifiers.
 - 1. Single Layer Dry Film Thickness: 60 mils.
 - 2. Prime Coat as recommended by Manufacturer.
 - 3. ASTM C836.
 - 4. Complies with National Standard of Canada 37.58 - M86.
 - 5. Coverage Rate: 4 gallons per 100 square feet.

6. Shore Hardness, ASTM C836: 85.
7. Elongation, ASTM D412: 600 percent.
8. Tensile Strength, ASTM D412: 50 PSI.
9. Water Vapor Permeance, ASTM E96: 0.1 perm.
10. Heat Aging, ASTM C836: No Cracking.
11. Crack Bridging, ASTM C836: Pass (10 cycles).
12. Adhesion, ASTM C836: 5 lbs/in.
13. Solids: Minimum 90 percent.
14. Color: Black.
15. Reference: 192 One-Kote by KARNAK Corporation.

PART 3– EXECUTION

3.1 EXAMINATION

- A. Before work is started, applicator shall thoroughly examine all surfaces for any deficiencies.
- B. Notify Architect in writing of any defects.

3.2 SURFACE PREPARATION

- A. Surface should be free of oil, grease, dirt, laitance and loose material.
- B. Repair all cracks and holes as recommended by Manufacturer, before applying surface coating.

3.3 APPLICATION

- A. Comply with manufacturer recommendations and approved submittals. Mix as recommended by manufacturer.
- B. For fabric reinforced applications, apply first coat. Apply reinforcing fabric over the wet coating, overlapping all edges. Smooth out all wrinkles, to ensure there is no trapped air beneath fabric. Apply second coat.

END OF SECTION

SECTION 07.1326 - SELF-ADHERING SHEET WATERPROOFING

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 the following:
 - 1. Modified bituminous sheet waterproofing.
 - 2. Molded-sheet drainage panels.
- B. Related Sections include the following:
 - 1. Division 07 Section "Sealants" for joint-sealant materials and installation.

1.3 SUBMITTALS

- A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.
- B. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that is approved or licensed by waterproofing manufacturer for installation of waterproofing required for this Project.
- B. Source Limitations: Obtain waterproofing materials, protection course, and molded-sheet drainage panels through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
 - 1. Do not double-stack pallets of membrane on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
 - 2. Protect primer, mastic and adhesive from moisture and potential sources of ignition.

3. Store drainage composite or protection board flat and off the ground. Provide cover on top and all sides.
4. Store only as much material at point of use as required for each day's work.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
 1. Do not apply waterproofing in snow, rain, fog, or mist.
- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.7 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to replace waterproofing material that does not comply with requirements or that fails to remain watertight within specified warranty period.
 1. Warranty does not include failure of waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in substrate exceeding 1/16 inch in width.
 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Not less than 60-mil thick, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated to a 4-mil thick, polyethylene film with release liner on adhesive side. No special adhesive or heat shall be required to form laps. Provide membrane with the following physical properties:
 1. Performance Based Specification: Waterproofing membrane shall have the following characteristics:
 - a. Compliance: AREMA Specification Chapter 29 - Waterproofing.
 - b. Thickness:
 - 1) Carrier Film: 4 mils.
 - 2) Polymeric Membrane: 56 mils.
 - c. Tensile Strength, ASTM D412, Die C:
 - 1) Carrier Film: 5,900 psi (40.71 MPa) minimum.
 - 2) Polymeric Membrane: 460 psi (3.23 MPa) minimum.
 - d. Elongation, ASTM D412, Die C: Polymeric Membrane: 971 % minimum.
 - e. Peel Adhesion, ASTM D903: 11.8 lbf/in. (2068 N/m).
 - f. Lap Adhesion, ASTM D1876: 8.62 lbf/in. (1508 N/m)
 - g. Water Vapor Permeability, ASTM E96, Method B: 0.036 perms.
 - h. Water Absorption, ASTM D570: 0.1 percent, 72 hours maximum.
 - i. Resistance to Hydrostatic Head: Equivalent to 230.9 feet (70.3 m) of water.

- j. Puncture Resistance, ASTM E154: 48.2 lbf (214.6 N).
 - k. Exposure to Fungi, Soil Test: Pass, 16 weeks.
 - l. Color:
 - 1) Carrier Film: White.
 - 2) Polymeric Membrane: Black.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
- 1. W. R. Meadows, Inc.; SealTight Mel-Rol. (Basis of Design).
 - 2. American Hydrotech, Inc.; VM 75.
 - 3. American Permaquik Inc.; PQ 7100.
 - 4. Carlisle Coatings & Waterproofing Inc.; CCW MiraDRI 860/861.
 - 5. GCP Applied Technologies: Bituthene 3000

2.2 AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
- 1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Primer: Liquid waterborne primer recommended for substrate by manufacturer of sheet waterproofing material.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.
- D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.
- E. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.
- F. Sheet Strips: Self-adhering, rubberized-asphalt sheet strips of same material and thickness as sheet waterproofing.
- G. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.
- 1. Detail Tape: Two-sided, pressure-sensitive, self-adhering reinforced tape, 4-1/2 inches wide, with a tack-free protective adhesive coating on one side and release film on self-adhering side.
 - 2. Detail Strips: 62.5 mil thick, felt-reinforced self-adhesive strip, 9 inches wide, with release film on adhesive side.
- H. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch thick, predrilled at 9-inch centers.

2.3 MOLDED-SHEET DRAINAGE PANELS

- A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 sieve laminated to one side with a polymeric film bonded to the other side of a studded, nonbiodegradable, molded-plastic-sheet drainage core, with a vertical flow rate of 9 to 15 gpm per ft.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
 2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 3. Verify that compacted subgrade is dry, smooth, and sound; and ready to receive adhesive-coated HDPE sheet.
 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.
- E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
1. Install sheet strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch.
- F. Bridge and cover isolation joints, expansion joints and discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips.
1. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.

- G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
 - 1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:
 - a. At footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.
- H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

3.3 MODIFIED BITUMINOUS SHEET WATERPROOFING APPLICATION

- A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions and according to recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.
- D. Two-Ply Application: Install sheets to form a membrane with lap widths not less than 50 percent of sheet widths to provide a minimum of 2 thicknesses of sheet membrane over areas to receive waterproofing.
- E. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.
- F. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic.
- G. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing.
- H. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches beyond repaired areas in all directions.
- I. Install protection course with butted joints over waterproofing membrane immediately.
 - 1. Molded-sheet drainage panels may be used in place of a separate protection course to vertical applications when approved by waterproofing manufacturer and installed immediately.

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

3.4 MOLDED-SHEET DRAINAGE PANEL INSTALLATION

- A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesives that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

- 1. For vertical applications, install membrane waterproofing before installing drainage panels.

3.5 PROTECTION AND CLEANING

- A. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Protect installed membrane and panels from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 13 26

SECTION 07.2100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Concealed building insulation.
 - 2. Safing Insulation.
 - 3. Sound attenuation insulation.
- B. Related Sections include the following:
 - 1. Division 04 Section "Unit Masonry" for insulation installed in cavity walls and masonry cells.

1.3 DEFINITIONS

- A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 PERFORMANCE REQUIREMENTS

- A. Plenum Rating: Provide glass-fiber insulation where indicated in ceiling plenums whose test performance is rated as follows for use in plenums as determined by testing identical products per "Erosion Test" and "Mold Growth and Humidity Test" described in UL 181, or on comparable tests from another standard acceptable to authorities having jurisdiction.
 - 1. Erosion Test Results: Insulation shows no visible evidence of cracking, flaking, peeling, or delamination of interior surface of duct assembly, after testing for 4 hours at 2500-fpm air velocity.
 - 2. Mold Growth and Humidity Test Results: Insulation shows no evidence of mold growth, delamination, or other deterioration due to the effects of high humidity, after inoculation with *Chaetomium globosum* on all surfaces and storing for 60 days at 100 percent relative humidity in the dark.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.
- C. Research/Evaluation Reports: For foam-plastic insulation.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface-Burning Characteristics: ASTM E 84.
 - 2. Fire-Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect plastic insulation as follows:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. 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 FOAM-PLASTIC BOARD INSULATION

- A. Perimeter Insulation: Extruded-Polystyrene Board Insulation: ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively. Provide thickness as indicated on the Drawings.
1. Manufacturers:
 - a. Amoco Foam Products Company, Smyrna, GA. - "Amofoam;"
 - b. DiversiFoam Products;
 - c. Dow Chemical Company - "Styrofoam Square Edge";
 - d. Owens Corning – "Foamular."
 - e. Kingspan Insulation – North America "Greenguard"
 2. Density: 1 pcf;
 3. Minimum compressive strength: 25 psi when tested in accordance with ASTM D 1621;
 4. Aged R-value: 5.0 per inch at 75 degree mean temperature in accordance with ASTM C 518;

2.3 GLASS-FIBER BLANKET INSULATION

- A. Manufacturers:
1. CertainTeed Corporation.
 2. Guardian Fiberglass, Inc.
 3. Johns Manville.
 4. Knauf Fiber Glass.
 5. Owens Corning.
- B. Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft, vapor-retarder membrane on 1 face.
- C. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:
1. 2-1/2 inches thick: R-10.9 (Owens Corning CW225);
 2. 3-1/2 inches thick: R-13;
 3. 6-1/4 inches thick: R-19;
 4. 8-1/4 inches thick: R-30;
 5. 11-5/8 inches thick: R-38;
 6. Other thicknesses as indicated or required.

2.4 SAFING INSULATION

- A. Manufacturers:
1. Fibrex Insulations, Westmont, IL - "FBX Safing Insulation;"
 2. Thermafiber LLC, division of United States Gypsum Company, Wabash, IN - "Thermafiber."

- B. Asbestos-free, semi-refracting fibers in thicknesses and widths as required with the following attributes:
 - 1. Melting Point: Up to 2,000 degrees F;
 - 2. Non-combustible in accordance with ASTM E 136;
 - 3. Density: 4.0 pcf minimum;
 - 4. Flame Spread/Smoke Density: 5/0 in accordance with ASTM E 84;
 - 5. Moisture Absorption: Less than 1.0 percent per ASTM C 553;

2.5 SOUND ATTENUATION BATT INSULATION

- A. Manufacturers:
 - 1. USG Interiors Division, Chicago, IL - "Thermafiber SAFB."
 - 2. Or alternative of the quality necessary to meet the specifications.
- B. Semi-rigid, 2.5 pcf density, mineral-fiber blanket, 3 inches thick, other thicknesses as indicated on the Drawings, unfaced.

2.6 AUXILIARY INSULATING MATERIALS

- A. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.

2.8 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.
- E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF PERIMETER INSULATION

- A. On vertical surfaces, insulation units may be dry-laid against foundation as backfilling progresses or set in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.
 - 1. Install insulation board with joints tightly butted.

3.5 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.
- C. Set vapor-retarder-faced units with vapor retarder to warm-in-winter side of construction, unless otherwise indicated.
 - 1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

D. Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Place insulation behind electrical receptacles and piping, with vapor barrier facing to the warm-in-winter side, to form a completely insulated area. Install with tight joints. Cut neatly at all intersections and penetrations.
4. Seal joints on inside face of insulation units with vapor barrier type facing, with self-adhesive vapor barrier tape, and tape over punctures and seal at edges of coverage and at penetrating elements, so as to form a complete vapor barrier for expanse of insulation in each area;
5. Seal joints caused by pipes, conduits, electrical boxes and similar item penetrating vapor retarders with cloth or aluminized tape of type recommended by vapor retarder manufacturer to create an air-tight seal between penetrating objects and vapor retarder;
6. Repair any tears or punctures in vapor barrier immediately before concealment by other work. Cover with tape or another layer of vapor retarder.
7. Maintain 3-inch clearance of insulation around recessed lighting fixtures.
8. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

3.6 SAFING INSULATION

- A. Install at joints between fire rated walls and underside of overhead structure and other locations where indicated so that an effective fire stop is provided.

3.7 SOUND ATTENUATION INSULATION

- A. Install sound control batt insulation in stud cavities extending up to underside of floor or roof deck above. Friction-fit between metal studs, behind electrical receptacles and piping. Install with tight joints. Cut neatly at all joints and intersections and as required for stud spacings.
- B. Provide sound attenuation batts where indicated on the Drawings and around the following areas:
1. Offices;
 2. Classrooms;
 3. Health Suite;
 4. Toilet Rooms;

3.8 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07.2100

SECTION 072600 – VAPOR RETARDERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Reinforced polyethylene vapor barrier for sub-slab applications.
 - 2. Vapor retarders for wall applications.

1.2 ACTION SUBMITTALS

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

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.

PART 2 - PRODUCTS

2.1 VAPOR BARRIER – SLAB-ON-GRADE

- A. Sheet Vapor Barrier: ASTM E 1745, Class C, 3-Ply Reinforced Polyethylene Vapor Barrier. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Raven Industries, Inc.
 - b. Reef Industries, Inc.
 - c. Stego Industries, LLC.
 - 2. Location: Below slabs on grade.
 - 3. Basis of Design: Griffolyn T-65 by Reef Industries, Inc

2.2 VAPOR RETARDERS – WALL

- A. Polyimide Film Vapor Retarders: ASTM C665, 2-mil-thick sheet, with maximum permeance rating of 1.0 perm per ASTM E96 Desiccant method.
- B. Location: Interior face of exterior stud cavity walls.

2.3 ACCESSORIES

- A. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.
- B. Adhesive for Vapor Retarders: Product recommended by vapor-retarder manufacturer and has demonstrated capability to bond vapor retarders securely to substrates indicated.
- C. Fasteners: Metal staples as recommended by manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to vapor retarders, including removing projections capable of puncturing vapor retarders.

3.2 INSTALLATION OF VAPOR RETARDERS

- A. Install vapor retarder in accordance with manufacturer's instructions.
- B. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives, vapor retarder fasteners, or other anchorage system as recommended by manufacturer. Extend vapor retarders to cover miscellaneous voids.
- C. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.
- D. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

END OF SECTION 072600

SECTION 07.2700 – WEATHER BARRIER

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of a self-adhesive, vapor permeable, sheet membrane air barrier.
- C. Application of materials to provide bridge and seal air leakage pathways in
 - 1. Wall and roof connections and penetrations.
 - 2. Connections to foundation walls.
 - 3. Walls, windows, curtain walls, storefronts, louvers or doors
 - 4. Expansion and control joints.
 - 5. Masonry ties.
 - 6. All other penetrations through the wall assembly.

1.02 RELATED SECTIONS

- A. Section 04 20 00 - Unit Masonry.
- B. Section 04 73 00 – Manufactured Stone Veneer
- C. Section 06 16 00 – Sheathing
- D. Section 07 21 00 - Thermal Insulation.
- E. Section 07 53 00 – EPDM Membrane Roofing.
- F. Section 07 62 00 – Sheet Metal Flashing and Trim.
- G. Section 07 72 00 - Roof Accessories
- H. Section 08 41 10 – Aluminum Framed Entrances and Storefronts
- I. Section 09 29 00 - Gypsum Board

1.03 REFERENCES

- A. AATCC 127 - American Association of Textile Chemists and Colorists (AATCC): AATCC 127 - Test Method for Water Resistance: Hydrostatic Pressure Test. AC 38
- B. AC 38 - International Code Council Evaluation Service, Inc. (ICC-ES): ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers.
- C. ASTM D882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- D. ASTM D1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- E. ASTM D3330 – Standard Test method for Peel Adhesion of Pressure-Sensitive Tape.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

- G. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
- H. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
- I. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of the air barrier.
 - a. Air Barrier Installer performing Work shall be approved by air barrier membrane manufacturer.
- B. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
- C. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

1.06 PRECONSTRUCTION MEETING

- A. Preconstruction Meeting: Convene 2 (two) weeks prior to commencing Work of this section, – The Air Barrier System.

1.07 MOCK-UPS

- A. Prior to installation of air barrier, apply air barrier as follows to verify details under shop drawing submittals and to demonstrate tie-ins with adjoining construction, and other termination conditions, as well as qualities of materials and execution.
- B. Apply air barrier in field-constructed mock-ups of assemblies specified in Section 04 20 00 – Unit Masonry

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean dry area in accordance with manufacturer's instructions.
- C. Store at temperatures at or above 40°F (4°C), free from contact with cold or frozen surfaces.
- D. Protect materials during handling and application to prevent damage or contamination.
- E. Protect materials from direct sunlight or inclement weather prior to installation.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Do not proceed with product application if rainfall is forecast or imminent within 12 hours.
- C. Apply membrane when air and surface temperatures are 14°F (-10°C) and rising.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Basis of design: W. R. MEADOWS®, INC., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Website: www.wrmeadows.com.
- B. Available manufactures subject to compliance with the requirements of this specification:
 - a. Henry Company
 - b. Carlisle coatings & waterproofing

2.02 MATERIALS

- A. Self-Adhesive Air Barrier Sheet Membrane: Fully adhered, sheet membrane, vapor permeable air and water resistive barrier.
 - 1. Performance Based Specification: Air barrier membrane shall be water-based, that cures to form a tough, seamless, elastomeric membrane having the following characteristics:
 - a. Air Leakage ASTM E2357: < 0.04 cfm/ft.² @ 75 Pa (1.57 lb./ft.²).
 - b. Air Permeability ASTM E2178: < 0.004 cfm/ft.² @ 75 Pa (1.57 lb./ft.²).
 - c. Flame Spread and Smoke Development, ASTM E84: Class A.
 - d. Low Temperature Flexibility, AC38: Pass
 - e. Nail Penetration, ASTM D1970: Pass
 - f. Peel Adhesion, ASTM D3330: Pass
 - g. Tensile Strength, ASTM D882: MD: 50 lbf/in (5.64 N/m).
XD: 30 lbf/in (3.39 N/m).
 - h. Water Vapor Permeance: ASTM E96 Method A: 41 perms.
ASTM E96 Method B: 54 perms.
 - d. Water Resistance, AATCC 127: Pass.

2. Basis of design Specification: AIR-SHIELD SMP by W. R. MEADOWS.

2.03 ACCESSORIES

- A. Accessories are based on the Basis of design and should be compatible with the manufactures weather barrier.
- B. Liquid Flashing: Fluid applied, single component, flashing membrane for rough openings and detailing.
 1. AIR-SHIELD LIQUID FLASHING by W. R. MEADOWS.
- C. Base of Wall Thru-Wall Flashing Membrane: Self-adhesive polymeric sheet membrane having a thickness of 40 mils (1 mm).
 1. AIR-SHIELD THRU-WALL FLASHING by W. R. MEADOWS.
- D. Exterior Sheathing Raw Edge Treatment:
 1. MEL-PRIME™ VOC Compliant Solvent-Base Adhesive or Standard Solvent-Base Adhesive by W. R. MEADOWS.
- E. Adhesive for Thru Wall Flashing Membrane:
 1. MEL-PRIME VOC Compliant Solvent-Base Adhesive or Standard Solvent-Base Adhesive by W. R. MEADOWS.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive air barrier.
- B. Clean and prepare surfaces to receive air barrier membrane in accordance with manufacturer's instructions.
- C. Do not apply membrane to surfaces unacceptable to manufacturer.
- D. Prefill all joints, gaps and cracks that are greater than 1/4" (6 mm) with a generous bead of the liquid flashing material and allow to cure fully.
- E. Exterior Sheathing Panels
 1. Install and fasten exterior sheathing panels according to the sheathing manufacturer's instructions.
 2. Install fasteners flush with the surface and into the framing.

3. Remove any fasteners that are countersunk.
 4. Pre-treat any holes from the removal of the fasteners with liquid flashing prior to full wall membrane installation.
 5. Inspect all joints to ensure that all areas are clean, dry, smooth, and free from all bond-breaking contaminants.
 6. Remove and replace any damaged structural wall components.
- F. Concrete Masonry Units or Concrete
1. Prepare concrete surfaces so that they are clean, free of standing water, ice, snow, frost, dust, dirt, oil, curing compounds or any other foreign material that could prevent proper adhesion of the membrane.
 2. Cure concrete a minimum of 14 days prior to full wall sheet membrane installation.
 3. Strike masonry joints flush.
 4. Patch all holes and voids and smooth out any surface misalignments.
- G. Ensure joints between dissimilar building materials are sealed with a strip of the self-adhesive membrane, 6" (150 mm) wide, centered over the joint.

3.03 APPLICATION OF AIR BARRIER SYSTEM

A. ROUGH OPENING TRANSITION MEMBRANE

1. Self-Adhesive Transition Membrane.
 - a. Prefill inside corners of frame with liquid flashing material.
 - b. Pre-cut the self-adhesive membrane for each area of the rough opening to ensure ease of handling.
 - c. Apply membrane strips into each inside corner allowing for 3" (75 mm) coverage in all directions.
 - d. Apply the first pre-cut strip at the base of the rough opening by removing the release paper and rolling firmly into place, ensuring that there is a minimum of 3" (75 mm) of membrane extending onto the wall and a minimum of 3" (75 mm) of membrane extending into the rough opening.
 - e. Repeat this procedure for the vertical areas of the rough opening and the header portion of the opening.
 - f. Overlap all cut edges of the membrane a minimum of 3" (75 mm).
 - g. Seal all terminations with liquid flashing material.

B. CRACK AND JOINT TREATMENT

1. Treatment of joints or cracks larger than $\frac{1}{4}$ " (6.35 mm) and less than $\frac{1}{2}$ " (12.7 mm).
 - a. Prefill any joints or cracks with the liquid flashing material.
 - b. Apply a generous bead of material over the joint.
 - c. Press, and spread liquid flashing into the joint.
 - d. Allow material to skin over prior to full application of liquid flashing into the rough opening.

2. Treatment of joints or cracks larger than ½" (12.7 mm)
 - a. Install backer rod into the joint to control depth of liquid flashing material.
 - b. Apply a generous bead of material over and into the joint.
 - c. Press, and spread liquid flashing into the joint.
 - d. Smooth out using a spreader tool or putty knife
 - e. Allow material to cure prior to full application of liquid flashing into the rough opening.

C. PENETRATIONS

1. Self-Adhesive Transition Membrane
 - a. Pre-cut air barrier membrane to length to fully cover the penetration.
 - b. Prepare AIR-SHIELD SMP membrane for application by cutting slits a minimum 2.5" (63.5 mm)] down the strip of membrane.
 - c. Apply air barrier membrane around penetration and apply a bead of liquid flashing at termination point on the penetration.
 - d. Apply full sheet of air barrier membrane cut around the penetration and seal the cut edge with liquid flashing.
2. Fluid Applied Liquid Flashing
 - a. Pre-treat all penetrations with a bead of liquid flashing around the penetration ensuring full coverage of the gap.
 - b. Lay sheet of air barrier membrane over sheathing and around the penetration and roll press into place.
 - c. Apply liquid flashing over penetration and onto the air barrier membrane 3" (75 mm) in all directions in a continuous installation.

D. AIR BARRIER MEMBRANE

1. Horizontal Installation
 - a. Snap chalk line for guidance.
 - b. Pre-cut material to required length.
 - c. Roll cut length of membrane with release paper outwards.
 - d. Peel back the release paper starting at the corner, by approximately 6" (152.4 mm).
 - e. Fold release paper back and using hand roller or stiff brush, lightly apply the exposed adhesive surface to the prepared substrate.
 - f. Remove release paper only as membrane is being applied.
 - g. Use hand roller or stiff brush, starting in the middle, to smooth out any air bubbles, releasing the air to each side.
 - h. Overlap subsequent courses of membrane a minimum of 2.5" (63.5 mm).
 - i. Apply liquid flashing to all reverse lap terminations.
 - j. Apply liquid flashing to any leading edge termination at the end of each working day.
2. Vertical Installation
 - a. Snap chalk line for guidance.
 - b. Pre-cut material to required length.

- c. Roll cut length of membrane with release paper outwards.
- d. Peel back the release paper starting at the corner by approximately 6" (152.4 mm).
- e. Fold release paper back and using hand roller or stiff brush, lightly apply the exposed adhesive surface to the prepared substrate.
- f. Remove release paper only as membrane is being applied.
- g. Use hand roller or stiff brush, starting in the middle, to smooth out any air bubbles, releasing the air to each side.
- h. Allow rest of rolled up material to drop down with release paper still attached and check for proper alignment.
- i. Remove remaining release paper and use hand roller or stiff brush across the entire adhered section.
- j. Smooth air bubbles with stiff brush/roller.
- k. Overlap subsequent courses of membrane a minimum of 2.5" (63.5 mm).
- l. Apply liquid flashing to all reverse lap terminations.
- m. Apply liquid flashing to any leading edge termination at the end of each working day.

D. THROUGH WALL FLASHING

- 1. Prime surfaces to be covered in one working day with adhesive approved by membrane manufacturer.
- 2. Remove release paper prior to application.
- 3. Apply through wall flashing at based of masonry walls as indicated on drawings.
- 4. Recess through wall flashing 1/2" (13 mm) from the face of the masonry.
- 5. Apply a bead of pointing mastic if through wall flashing is not embedded into masonry.

3.04 PROTECTION

- A. Cover air barrier membrane as soon as possible, to prevent damage due to construction activities, inclement weather and prolonged UV exposure.

END OF SECTION 07.2700

SECTION 07.3113 - ASPHALT SHINGLES

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. Asphalt shingles.
 - 2. Underlayment.
 - 3. Ridgevents.
- B. Related Sections:
 - 1. Division 06 Section "Rough Carpentry" for wood framing.
 - 2. Division 06 Section "Sheathing" for roof sheathing.
 - 3. Division 07 Section "Sheet Metal Flashing and Trim" for metal counterflashings and flashings.

1.3 DEFINITION

- A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of asphalt shingle indicated.
- C. Warranties: Sample of special warranties.
- D. Maintenance Data: For each type of asphalt shingle to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated, weathertight location according to asphalt shingle manufacturer's written instructions. Store underlayment rolls on end on pallets or other raised surfaces. Do not double stack rolls.

1. Handle, store, and place roofing materials in a manner to avoid significant or permanent damage to roof deck or structural supporting members.
- B. Protect unused underlayment from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

1.6 WARRANTY

- A. Warranty: Standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Manufacturing defects.
 - b. Structural failures including failure of asphalt shingles to self-seal after a reasonable time.
 2. Material Warranty Period: 30 years from date of Substantial Completion, prorated, with first three years nonprorated.
 3. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds up to 100 mph for five years from date of Substantial Completion.
 4. Workmanship Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Multitab-Strip Asphalt Shingles: ASTM D 3462, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Atlas Roofing Corporation.
 - b. CertainTeed Corporation.
 - c. GAF Materials Corporation.
 - d. Owens Corning.
 2. Tab Arrangement: Three tabs, regularly spaced.
 3. Strip Size: Manufacturer's standard.
 4. Algae Resistance: Granules treated to resist algae discoloration.
 5. Color and Blends: As selected by Architect from manufacturer's full range.
- B. Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.2 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D 226 or ASTM D 4869, asphalt-saturated organic felts, nonperforated.
- B. Ice & Water Membrane: ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and "split" back plastic release film

1. Provide ice and water membrane 2'-0" min. from all exterior walls at roof eaves, 2'-0" from valleys, and ridges.

2.3 RIDGEVENTS

- A. Rigid Ridgevent: Manufacturer's standard, rigid section high-density polypropylene or other UV-stabilized plastic ridge vent with nonwoven geotextile filter strips and external deflector baffles; for use under ridge shingles.

2.4 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- diameter, barbed shank, sharp-pointed, with a minimum 3/8-inch- diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.
 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- C. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire with low-profile capped heads or disc caps, 1-inch minimum diameter.

2.5 METAL FLASHING AND TRIM

- A. General: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
 1. Sheet Metal: Stainless steel.
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item.
 1. Apron Flashings: Fabricate with lower flange a minimum of 5 inches over and 4 inches beyond each side of downslope asphalt shingles and 6 inches up the vertical surface.
 2. Drip Edges: Fabricate in lengths not exceeding 10 feet with 2-inch roof-deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provision has been made for flashings and penetrations through asphalt shingles.

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

3.2 UNDERLAYMENT INSTALLATION

- A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
- B. Single-Layer Felt Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides a minimum of 2 inches over underlying course. Lap ends a minimum of 4 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with felt underlayment roofing nails.
1. Install fasteners at no more than 36 inch (900 mm) o.c.

3.3 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.
- C. Rake Drip Edges: Install rake drip edge flashings over underlayment and fasten to roof deck.
- D. Eave Drip Edges: Install eave drip edge flashings below underlayment and fasten to roof sheathing.

3.4 ASPHALT SHINGLE INSTALLATION

- A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.
1. Extend asphalt shingles 3/4 inch over fasciae at eaves and rakes.
 2. Install starter strip along rake edge.

- C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- E. Install asphalt shingles by single-strip column or racking method, maintaining uniform exposure. Install full-length first course followed by cut second course, repeating alternating pattern in succeeding courses.
- F. Fasten asphalt shingle strips with a minimum of four roofing nails located according to manufacturer's written instructions.
 - 1. When ambient temperature during installation is below 50 deg F, seal asphalt shingles with asphalt roofing cement spots.
- G. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- H. Ridge Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.
 - 1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION 07 3113

SECTION 074646 - FIBER-CEMENT SIDING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes fiber-cement siding.
- B. Related Requirements:
 - 1. Section 061000 "Rough Carpentry" for wood furring, grounds, nailers, and blocking.
 - 2. Section 072500 "Weather Barriers" for weather-resistive barriers.
 - 3. Section 099100 "Painting" for field painting.

1.2 COORDINATION

- A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples for Verification: For each type, color, texture, and pattern required.
 - 1. 12-inch- ong-by-actual-width Sample of siding.
- C. Product Certificates: For each type of fiber-cement siding.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fiber-cement siding.
- E. Research/Evaluation Reports: For each type of fiber-cement siding required, from ICC-ES.
- F. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for fabrication and installation.
 - 1. Build mockups for fiber-cement siding including accessories.
 - a. Size: 48 inches (1200 mm) long by 60 inches (1800 mm) high.
 - b. Include outside corner on one end of mockup.
 - 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 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with labels intact until time of use.
- B. Store materials on elevated platforms, under cover, and in a dry location. Panels must be stored flat.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including cracking and deforming.
 - b. Deterioration of materials beyond normal weathering.
 - 2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2 FIBER-CEMENT SIDING

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. James Hardie Building Products, Inc.
 - c. Nichiha Fiber Cement USA.
 - d. GAF.
- B. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- C. Nominal Thickness: Not less than 5/16 inch.
- D. Type 01: Horizontal Pattern: Boards 6-1/4 to 6-1/2 inches wide in plain style with smooth texture.
 1. Basis of Design: Savannah Smooth Premium Plank Siding Series by Nichiha Fiber Cement USA.
- E. Type 02: Vertical Pattern: Fiber Cement sheets with smooth texture and ribbed grooves at 4" oc.
 1. Basis of Design: Ribbed Dimension Series Architectural Wall Panels by Nichiha Fiber Cement USA.
- F. Factory Priming: Manufacturer's standard acrylic primer.
- G. Finishing: Paint all exposed faces, edge, and components in the field in accordance with Manufacturer specification and Section 099100 "Painting". All fasteners heads to be countersunk.

2.3 ACCESSORIES

- A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.
 1. Provide accessories matching color and texture of adjacent siding unless otherwise indicated.
- B. Siding Accessories: Provide starter strips, edge trim, outside and inside corner panels and trim, door and window casing and trim, and other items as recommended by siding manufacturer for building configuration and to provide a complete installation.
- C. Flashing: Provide aluminum flashing complying with Section 076200 "Sheet Metal Flashing and Trim" at window and door heads and where indicated or required by siding manufacturer.
 1. Finish for Aluminum Flashing: Siliconized polyester coating.
 2. Install joint flashing (slip sheet) at panel joints.
 3. Color: Custom color to sample provided by Architect.
- D. Fasteners:
 1. For fastening to wood, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1 inch (25 mm) into substrate or as required by manufacturer.

2. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1/4 inch (6 mm), or three screw-threads, into substrate or as required by manufacturer.
3. For fastening fiber cement, use hot-dip galvanized fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of fiber-cement **siding** and related accessories.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 1. Do not install damaged components.
 2. Install fasteners no more than 24 inches o.c.
- B. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight installation.

3.4 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION

SECTION 07.6200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes sheet metal flashing and trim in the following categories:
 - 1. Exposed trim
 - 2. Pre-Manufactured metal coping cap systems and fascias
 - 3. Scuppers, collector heads and downspouts
 - 4. Metal drip edge
 - 5. Metal flashings
 - 6. Reglet counted counterflashings
 - 7. Surface mounted counterflashings
 - 8. Roof penetrations
 - 9. Drains
- B. RELATED SECTIONS
 - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking, and plywood backing for brake metal fabrications and sheathing panels.
 - 2. Division 07 Section "Joint Sealants"
 - 3. Division 07 Section "Thermal Insulation"
 - 4. Division 07 Section "Modified Bituminous Membrane Roofing"
 - 5. Division 07 Section "Standing Seam Metal Roof Panels"
 - 6. Division 22 Section "Plumbing"

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.
- B. ANSI/SPRI ES-1 (Pre-Manufactured Metal Coping Cap System)
 - 1. ANSI/SPRI ES-1 test reports must be submitted for specific project wind uplift requirements per Section 1.15 Design and Performance Criteria within Modified Bituminous Membrane Roofing specification.

- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.
- C. Shop Drawings of each item specified showing layout, profiles, methods of joining, and anchorage details.
- D. Samples of sheet metal flashing, trim, and accessory items, in the specified finish. Where finish involves normal color and texture variations, include Sample sets composed of two or more units showing the full range of variations expected.
1. 8-inch-square Samples of specified sheet materials to be exposed as finished surfaces.
 2. 12-inch-long Samples of factory-fabricated products exposed as finished Work. Provide complete with specified factory finish.
- E. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- F. Certification
1. Submit roof manufacturer's certification that metal fasteners furnished are acceptable to roof manufacturer.
- G. Manufacturer's Product Data
1. Metal material characteristics and installation recommendations.
 2. Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.
- H. ANSI/SPRI ES-1 (Pre-Manufactured Metal Coping Cap System)

1. Test report must be submitted for specific project wind uplift requirements per Section 1.15 Design and Performance Criteria within Modified Bituminous Membrane Roofing specification.

1.5 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
 1. Copper Standard: Comply with CDA's "Copper in Architectural Handbook."
- B. Installer Qualifications: Engage an experienced Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.6 PRODUCT HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 COORDINATION

- A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

1.8 WARRANTY

A. Manufacturer's Warranty

1. Pre-finished metal material shall require a written 20-year non-prorated warranty covering fade, chalking and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D-2244 or chalking excess of 8 units per ASTM D-659. If either occurs material shall be replaced per warranty, at no cost to the Owner.
2. Warranty shall also include the modified bitumen roof system, pre-manufactured metal coping cap system, and the transition between all systems, and shall be a single-source edge-to-edge warranty provided by ONE manufacturer.

3. At the request of the Owner, the Manufacturer will provide an annual inspection. The request for annual inspections shall be applicable for the life of the warranty.
- B. Contractor's Warranty
1. The Contractor shall provide the Owner with a notarized written warranty assuring that all sheet metal work including caulking and fasteners to be watertight and secure for a period of three (3) years from the date of final acceptance of the building. Warranty shall include all materials and workmanship required to repair any leaks that develop, and make good any damage to other work or equipment caused by such leaks or the repairs thereof.

PART 2 - PRODUCTS

2.1 METALS

- A. Copper: ASTM B 370; temper H00, cold rolled except where temper 060 is required for forming; not less than 16 oz./sq. ft., unless otherwise indicated in the project documents.
- B. Lead-Coated Copper: ASTM B 101, cold-rolled copper sheet, not less than 20 oz./sq. ft., both sides coated with lead weighing not less than 12 or more than 15 lb/100 sq. ft., unless otherwise indicated.
- C. Aluminum: Sheet Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:
 1. Mill Finish: Standard one side bright with a minimum thickness of 0.040 inch.
 2. Polyvinylidene fluoride (Kynar) Factory Finish Aluminum Sheet: ASTM B 209, 3105-H14, with a minimum thickness of 0.050 inch, unless listed otherwise. Aluminum shall be coated on both sides with an epoxy primer and on the weathering surface with a polyvinylidene fluoride (Kynar) coated finish.
 - a. Minimum thickness of Aluminum to be specified in accordance with SMACNA's Architectural Sheet Metal Manual.
 - b. Color shall be selected by Architect from manufacturer's standard color range. Area divider covers, equipment counterflashings, and slip flashings shall be mill finish.
- D. Stainless Steel Sheet: ASTM A240, Type 304.
 1. Finish: No. 2D (dull, cold rolled).
- E. Lead Sheet: ASTM B 749, Type L51121, copper-bearing lead sheet with a minimum thickness of 0.0675 inch, except not less than 0.0937-inch-thick for applications where burning (welding) is involved.
- F. Lead Flashing Sheet for Drains & Vent Pipes: Meets Federal Specification QQ-L-201, Grade B, four (4) pounds per square foot.

2.2 MANUFACTURED TWO PIECE REGLETS AND COUNTERFLASHING

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
1. Cheney Flashing Company
 2. Fry Reglet Corporation
 3. Keystone Flashing Company
- B. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated:
1. Material: Stainless steel, 0.0187 inch thick.
 2. Stucco Type: Provide with upturned fastening flange and extension leg of length to match thickness of applied finish materials or a minimum of 4".
 3. 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.
 4. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
 5. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of the counterflashing lower edge.
- C. Counterflashings: Provide counterflashing fabricated in the profile indicated and from the following metal in thickness, as indicated:
1. Formed to cover roof flashing system a minimum of four (4) inches below the termination bar. Side/end laps of three (3) inches minimum.
 2. Stainless steel, 0.0187 inch thick.

2.3 REGLET MOUNTED COUNTERFLASHINGS

- A. General: Shall be a one (1) piece shop fabricated type counterflashing. Units of type, material, and profile indicated, formed to cover roof flashing system a minimum of four (4) inches below the termination bar.
- B. Material: 0.050 aluminum or 20 oz. copper as indicated on the project details/drawings. Where the existing metal flashing is to remain, the materials shall be the same as the existing metal flashing.
- C. Provide lead wedges at 12" on center to sure the counterflashing in the sawcut joint. Provide polyurethane sealant at top edge.

2.4 SURFACE MOUNTED COUNTERFLASHINGS

- A. General: Shall be a one (1) piece shop fabricated type counterflashing. Units of type, material, and profile indicated, formed to cover roof flashing system a minimum of four (4) inches below the termination bar.
- B. Material: 0.050 aluminum or 20 oz. copper as indicated on the project details/drawings. Where the existing metal flashing is to remain, the materials shall be the same as the existing metal flashing.
- C. Surface-Mounted Type: Provide with holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.

2.5 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.
- B. Underlayment: Ply of specified base flashing modified membrane or approved equal.
- C. Fasteners:
 - 1. Nails and Fasteners: Non-ferrous metal or hot dipped galvanized fasteners complying with ASTM A153 and connectors complying with ASTM A653, Class G185; Type 304 or Type 316 stainless steel fasteners and connectors shall be used with new generation of pressure-treated wood; except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel. Fasteners shall be self-clinching type of penetrating type as recommended by the manufacturer of the wood blocking/nailer material. Nails and fasteners shall be flush-driven through flat metal discs of not less than one (1) inch diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than one (1) inch diameter are used.
 - 2. Fastening shall conform to ANSI/SPRI ES-1 or as stated on section details, whichever is more stringent and per the manufacturer's requirements.
- D. Standing Seam Metal Roof Panels: Metal trim and flashing is specified in Division 07 Section "Standing Seam Metal Roof Panels"
- E. Metal Drip Edge: Kynar finished Aluminum, 0.050-inch-thick, with continuous cleat.
- F. Equipment Support/Slip Flashing: Mill finished Aluminum, 0.040 inch thick.
- G. Metal Expansion Joints: 20 oz. copper.
- H. Scuppers and Collector Heads: Kynar finished Aluminum, 0.050-inch-thick with fully welded seams and 4" deck flanges.
- I. Escutcheon Plates: Kynar finished Aluminum, 0.050 inch thick.

- J. Downspouts: Kynar finished aluminum, 0.050-inch-thick with 2" wide x 0.050-inch double folded hold down straps at 5' on center secured to the building exterior wall.
- K. Pitch Pockets: 20 oz. copper.
- L. Solder for Stainless Steel: ASTM B 32, Grade Sn60, used with an acid flux of type recommended by stainless-steel sheet manufacturer; use a noncorrosive rosin flux over tinned surfaces.
- M. Solder for Copper: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
- N. Solder for Lead: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
- O. Fasteners and Rivets: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- P. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coat.
- Q. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- R. Sealing Tape: Pressure sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
- S. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim, and remain watertight.
- T. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.
- U. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur compounds, and other deleterious impurities.
- V. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- W. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.
- X. Roofing Cement: ASTM D 4586, Type I, asbestos free, asphalt based, of consistency required for application.

2.6 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated. Shop fabricate items were practicable. Obtain field measurements for accurate fit before shop fabrication.

- B. 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.
- C. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Review with designer and verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- D. Form exposed sheet metal work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- E. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength. Tin edges to be seamed, form seams, and solder.
- F. Expansion Provisions: Provide slotted or oversized fastener holes in metal trim pieces to allow for expansion. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used, or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- G. Sealed Joints: Form nonexpanding, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- H. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- I. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- J. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
 - 1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.7 SHEET METAL FABRICATIONS

- A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.
- B. Pre-manufactured Metal Copping Cap System: **SecureEdge 300 copping as manufactured by Carlisle SynTec** or Approved Equal.
 - 1. All components including corrosion resistant fasteners to be used in the copings shall be furnished by manufacturer. Metal shall be 0.050" aluminum with specified Kynar finish.
 - 2. Anchor chairs shall be 16 ga. galvanized x 16" long, and spaced at 40" o.c.
 - 3. All submittals for approved equals shall conform to Sections 1.5 Quality Assurance and 1.8 Design & Performance Criteria.

4. Provide a manufacturer's Edge-to-Edge warranty: Warranted materials shall be free of defects in material and workmanship. The manufacturer will also furnish their standard decorative finish warranty.
5. The coping cap corners and transitions shall have a continuous factory welded seams.
6. Extenders shall be fabricated from 0.050" aluminum with specified Kynar finish.

2.8 ALUMINUM EXTRUSION FABRICATIONS

- A. Aluminum Extrusion Units: Fabricate extruded-aluminum running units with formed or extruded-aluminum joint covers for installation behind main members where possible. Fabricate mitered and welded corner units at all areas calling for metal coping caps.

2.9 ALUMINUM FINISHES

- A. General: Comply with Aluminum Association's (AA) "Designation System for Aluminum Finishes" and NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for finish designations and application recommendations.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable in they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Verify that the substrate is sound, dry, smooth, clean sloped for drainage, and securely anchored. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet

metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

- C. Roof-Edge Flashings: Secure metal flashings at roof edges according to ANSI/SPRI ES-1 for the specific project wind uplift requirements per Section 1.15 Design and Performance Criteria within the Modified Bituminous Membrane Roofing specification.
- D. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Incorporate slotted or oversized fastener holes in sheet metal trim pieces to allow for expansion and contraction. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used, or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- E. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-temper edges of sheets to be soldered to a width of 1-1/2 inches, except where pre-tempered surface would show in finished Work.
- F. Sealed Joints: Form nonexpanding, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
 - 1. Use joint adhesive for nonmoving joints specified not to be soldered.
- G. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- H. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
- I. Underlayment: Where installing stainless steel or aluminum directly on cementitious or wood substrates, install a slip-sheet of modified base flashing membrane as specified in the Modified Bituminous Membrane Roofing specification or EPDM rubber.
 - 1. Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.
- J. Slip Counterflashing: Coordinate installation of counterflashing with installation of assemblies to be protected by counterflashing. Install counterflashing as indicated on the drawings, by the Engineer, or by the roofing membrane manufacturer. End joints shall be overlapping not less than 3" and secured together. Corners shall be mitered and fabricated to a watertight condition. The bottom of the counterflashing shall project 1/4" from the face of the wall with a down turned drip edge and cover the roof flashing system a minimum of four (4) inches below the termination bar. Install counterflashing system in accordance with plan details and in accordance with referenced standards. Secure with approved fasteners having a neoprene gasketed waterproofing washer at 8" on center minimum.
- K. Surface Mounted Counterflashings: Secure counterflashing with approved fasteners at 8" on center. Seal top of counterflashing with a continuous bead of the polyurethane sealant. End joints shall be overlapping not less than 3" and secured together. Corners shall be mitered and fabricated to a watertight condition. The bottom of the counterflashing shall project 1/4" from the face of the wall with a

downturned drip edge and cover the roof flashing system a minimum of four (4) inches below the termination bar. Install counterflashing system in accordance with plan details and in accordance with referenced standards.

- L. Counterflashings: Coordinate installation of counterflashings with installation of assemblies to be protected by counterflashing. Install counterflashings in reglets or receivers. Secure in a waterproof manner by means of snap-in installation and sealant, lead wedges and sealant, interlocking folded seam, or blind rivets and sealant. Lap counter flashing joints a minimum of 3 inches and bed with sealant.
- M. Reglet Mounted Counterflashings: Coordinate installation of counterflashing receiver. Saw cut mortar joint to proper depth to accept new reglet mounted counterflashing. Secure counterflashing with lead plugs at 12" on center. Seal top of counterflashing with a continuous bead of the specified polyurethane sealant. End joints shall be interlocking and overlapping not less than 3". Corners shall be mitered and sealed to a watertight condition. The bottom of the cap flashing insert shall project 1/4" from the face of the wall with a downturned drip edge (provide a downturned hem in areas subject to human contact). The new counterflashing shall cover the roof flashing system a minimum of four (4) inches below the termination bar. Install counterflashing system in accordance with plan details and in accordance with referenced standards and manufacturer's instructions.
- N. Drain Flashing: Coordinate roof-penetration flashing installation with roofing and installation of drains. Install lead flashing as follows:
 - 1. Turn lead flashing down inside drain a minimum of two (2) inches.
- O. Roof-Penetration Flashing: Coordinate roof-penetration flashing installation with roofing and installation of items penetrating roof. Install lead flashing as follows:
 - 1. Turn lead flashing down inside vent piping a minimum of one (1) inch, being careful not to block vent piping with flashing.
 - 2. Seal and clamp flashing to pipes penetrating roof, other than lead flashing on vent piping.
- P. SCUPPER THROUGH ROOF EDGE
 - 1. Install new wood nailers as required in scupper opening to allow for the installation and securement of the new through edge scupper.
 - 2. Install new scupper box in a 1/4" bed of mastic and secure to the wood nailers and masonry wall in accordance with manufacturer's recommendations and details. Assure all box seams are welded and have a minimum 4" flange. Make sure all corners are closed, and welded.
 - 3. Prime metal edge at a rate of 100 square feet per gallon and allow to dry.
 - 4. Install specified 2-ply roof flashing system as specified above.
 - 5. Install aluminum escutcheon plate behind scupper.
 - 6. Install downspouts to match existing. Secure to the building wall at five (5) feet on cen-

ter.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.
- C. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup, or similar minor repair procedures.

END OF SECTION 07.6200

SECTION 077253 - SNOW GUARDS

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. Pad-type seam mounted snow guards.

1.3 ACTION SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for snow guards.
- B. Shop Drawings: Include roof plans showing layouts and attachment details of snow guards.
 - 1. Include details of pad-type snow guards.
 - 2. Include calculation of number and location of snow guards based on snow load, roof slope, roof type, components, spacings, and finish.
- C. Samples: Full size pad-type unit.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of snow guard, for tests performed by manufacturer and witnessed by a qualified testing agency.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Performance Requirements: Provide snow guards that withstand exposure to weather and resist thermally induced movement without failure, rattling, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

- B. Structural Performance:
 - 1. Snow Loads: As indicated on Drawings.

2.2 RAIL-TYPE SNOW GUARDS

- A. Seam-Mounted, Pad-Type Snow Guards:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alpine SnowGuards; a division of Vermont Slate & Copper Services, Inc.
 - 1) Basis of design:
 - a) Shingle roof: PD40 Half Round Pad-Style Snow Guard; Copper
 - b) Metal Roof: PD30 Half Round Pad-Style Snow Guard: Copper
 - b. LMCurbs.
 - c. Metal Roof Innovations, Ltd.; S-5! Attachment Solutions.
 - d. Snow Management Systems; a division of Contek, Inc.
 - e. TRA-MAGE, Inc.
 - 2. Material & Finish: Copper

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, snow guard attachment, and other conditions affecting performance of the Work.
 - 1. Verify compatibility with and suitability of substrates including compatibility with existing finishes or primers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install snow guards according to manufacturer's written instructions. Space rows as recommended by manufacturer.
- B. Attachment for Standing-Seam Metal Roofing:
 - 1. Do not use fasteners that will penetrate metal roofing, or fastening methods that void metal roofing finish warranty.
 - 2. Seam-Mounted, Rail-Type Snow Guards: Stainless-steel clamps attached to vertical ribs of standing-seam metal roof panels.

END OF SECTION

SECTION 07.8413 - PENETRATION FIRESTOPPING

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. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
- B. Related Sections:
 - 1. Section 078446 "Fire-Resistive Joint Systems" for joints in or between fire-resistance-rated construction, and at exterior curtain-wall/floor intersections.

1.2 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.
- C. 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.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.

1.4 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.

- B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
- C. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
- D. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
- E. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
- F. Classification markings on penetration firestopping correspond to designations listed by the following:
- G. UL in its "Fire Resistance Directory."

1.5 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.

1.6 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following:
 - 1. [Hilti, Inc.](#)
 - 2. [3M Fire Protection Products.](#)
 - 3. [Tremco, Inc.; Tremco Fire Protection Systems Group.](#)

2.2 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.
- C. Fire-resistance-rated walls include fire walls, fire-barrier walls, and fire partitions.
- D. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- E. 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.
- F. Horizontal assemblies include floors, floor/ceiling assemblies, and ceiling membranes of roof/ceiling assemblies.
- G. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
- H. 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.
- I. 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.
- J. 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.
- K. Permanent forming/damming/backing materials, including the following:
 - 1. Slag-wool-fiber or rock-wool-fiber insulation.
 - 2. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
 - 3. Fire-rated form board.
 - 4. Fillers for sealants.
 - 5. Temporary forming materials.
 - 6. Substrate primers.
 - 7. Collars.
 - 8. Steel sleeves.

2.3 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.
- 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:
- K. 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.

2.4 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.
 - 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.
- C. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.
- D. 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 Maintenance 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.
- 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 07.8413

SECTION 07.8446 - FIRE-RESISTIVE JOINT SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Joints in or between fire-resistance-rated constructions.
- B. Related Sections:
 - 1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each fire-resistive joint system. Include location and design designation of qualified testing agency.
- C. Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fire-resistive joint systems.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure fire-resistive joint systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- B. Coordinate sizing of joints to accommodate fire-resistive joint systems.

PART 2 - PRODUCTS

2.1 FIRE-RESISTIVE JOINT SYSTEMS

- A. Where required, provide fire-resistive joint systems that are 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 assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide fire-resistive joint systems with ratings determined per ASTM E 1966 or UL 2079:
- C. Joints include those installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies, and roofs or roof/ceiling assemblies.
- D. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
- E. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. [Hilti, Inc.](#)
 - 2. [Johns Manville.](#)
 - 3. [3M Fire Protection Products.](#)
 - 4. [Tremco, Inc.; Tremco Fire Protection Systems Group.](#)

- F. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- G. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, 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 joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
- B. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
 - 1. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
 - 2. Remove laitance and form-release agents from concrete.
- C. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- D. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system 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 fire-resistive joint system's seal with substrates.

3.3 INSTALLATION

- A. General: Install fire-resistive joint systems 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 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 fire-resistive joint system.
- C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
 1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 2. Apply fill materials so they contact and adhere to substrates formed by joints.
 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 fire-resistive joint systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels will be visible to anyone seeking to remove or penetrate joint system. 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 - Fire-Resistive Joint System - Do Not Disturb. Notify Building Maintenance of Any Damage."
 2. Contractor's name, address, and phone number.
 3. Designation of applicable testing agency.
 4. Date of installation.
 5. Manufacturer's name.
 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Where deficiencies are found or fire-resistive joint systems are damaged or removed due to testing, repair or replace fire-resistive joint systems so they comply with requirements.
- B. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-

resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

END OF SECTION 07.8446

SECTION 07.9200 - 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. The following locations shall receive sealant in addition to locations shown on the Drawings:
 - 1. Where required to provide a positive barrier against passage of air and passage of moisture;
 - 2. Exterior and interior perimeter of all openings in exterior walls such as doors, windows, frames, louvers, grilles, etc.
 - 3. Joints where metal frames meet masonry;
 - 4. Control and expansion joints in masonry walls;
 - 5. Joints where masonry meets exposed structural or concrete steel members;
 - 6. Joints in cast stone, limestone, precast concrete and wall caps;
 - 7. Exterior door thresholds;
 - 8. Expansion joints in exterior concrete sidewalks, slabs, steps, and curbs;
 - 9. Joints in metal panels, siding or pre-formed roofing, to the extent required by the manufacturer's instructions;
 - 10. Joints at all locations where different materials are adjacent to each other;
 - 11. Joints of material that are uneven, irregular, or out-of-plane;
 - 12. Interior slabs on grade: All expansion, isolation, construction, and control joints, plumbing and electrical penetrations, steel column penetrations, and any other items penetrating slab on grade to provide a positive barrier against the passage of radon gas.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- 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. Provide custom colors where directed by Architect.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

- C. Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under service and application conditions, as demonstrated by testing and field experience.
- D. This Contractor shall, prior to sealing of interior slabs on grade, familiarize himself with radon, radon entry routes, and proper workmanship requirements to prevent the migration of radon gas into interior spaces. This Contractor shall exercise the highest quality control standards so as not to reduce the effectiveness of the proposed radon mitigation system.

1.5 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in manufacturer's original sealed containers with labels attached showing expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store in a dry space below 80 degrees Fahrenheit.
- C. Handle material according to manufacturer's printed instructions.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is de-ionized water, unless otherwise indicated.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

2.2 SEALANTS

- A. Two-Part Urethane Sealant: For locations except where another type is specified, sealant material shall conform to FS-TT-S-00227E, Type II, Class A and B ASTM C 920, Type M, Grade NS, Class 25. Provide one of the following:
1. "Sonolastic NP-2" by Sonneborn Building Products,
 2. "Dynatrol II" by Pecora Corporation,
 3. "Chem-Calk 500" by Bostik Construction Products,
 4. "Dymeric 240" by Tremco,
 5. "Vulkem 922" by Tremco.
- B. One Part, Low Modulus, Silicone: For joints in limestone, precast concrete, metal constructions, and column covers. ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT. Provide one of the following:
1. "864" by Pecora Corporation,
 2. "Spectrum 1" by Tremco with Primer #23,
 3. or equal as approved by the Architect.
- C. One Part, Pourable Urethane Sealant: For expansion and control joints in exposed slabs on grade, ASTM C 920, Type S, Grade P, Class 25, for Use T. Provide one of the following:
1. "Urexpan NR-201" by Pecora Corp.,
 2. "Sonolastic SL-1" by Sonneborn Building Products Co.,
 3. "Vulkem 45" by Tremco.
- D. Acrylic-Emulsion Sealant: For interior paintable joints in walls, manufacturer's standard, one-part, nonsag, acrylic, mildew-resistant, acrylic-emulsion sealant complying with ASTM C 834, Type OP, Grade NF. Provide one of the following:
1. "Sonolac" by Sonneborn Building Products Co.,
 2. "AC-20 + Silicone" by Pecora Corp.,
 3. "Chem-Calk 600" by Bostik Corp.,
 4. "Acrylic Latex 834" by Tremco.
- E. Fire-Stop Sealant: Refer to Division 07 Section "Fire-Resistive Joint Systems".

2.3 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Elastomeric Tubing Joint-Fillers: Butyl or EPDM tubing complying with ASTM D 1056, Non-absorbent to water and gas, capable of remaining resilient at temperatures down to -26 degrees F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance. Elastomeric tubing materials shall be of type or types recommended by sealant manufacturer.

- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Accessory Materials for Fire-Stopping Sealant: Forming joint-fillers, packing and other accessory materials as required for installation of fire-stopping sealants.

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 joint-sealant performance.
- 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. 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.
- 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.
 - 1. Elastomeric Sealant Installation Standard: Comply with ASTM C 962;
 - 2. Latex Sealant Installation Standard: Comply with ASTM C 790;
 - 3. Provide firestopping for conditions specified whether or not firestopping is indicated.
- B. Sealing of all cracks in interior slabs on grade shall be included in the work of this Section.
- C. Apply sealant with a gun, with proper size nozzles. Cracks smaller than 1/8 inch shall be sealed using a putty knife or other appropriate tool to sufficiently seal the crack. Use sufficient pressure to fill all voids and joints solid to the backup material.
- D. Surface of sealant shall be a full smooth bead, free of ridges, wrinkles, sags, air pockets and imbedded impurities.
- E. After all joints have been completely filled they shall be neatly tooled to eliminate air pockets or voids, and to provide a smooth, neat appearing finish.
- F. Immediately clean adjacent materials, which have been soiled; leave work in a neat, clean condition.
- G. Where urethane and silicone sealants abut, comply with manufacturer's recommended installation procedures so as to prevent adverse reactions

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07.9200

SECTION 07.9500 - EXPANSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes expansion control assemblies for floors, walls and ceilings.
- B. Related Sections include the following:
 - 1. Division 3 Section "Cast-in-Place Concrete."
 - 2. Division 4 Section "Unit Masonry."
 - 3. Division 7 Sections "Roofing."
 - 4. Division 7 Section "Sheet Metal Flashing and Trim."
 - 5. Division 9 Section "Acoustical Ceilings."
 - 6. Division 9 Section "Gypsum Board."

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Division 1 Section "Submittals."
- B. Product data:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
 - 3. Manufacturer's recommended installation procedures.
- C. Samples: Submit vinyl gasket color samples from manufacturer's complete range of available colors.

PART 2 - PRODUCTS

2.1 EXPANSION CONTROL JOINTS

- A. Design is based on the following products of MM Systems Corporation, Tucker, GA; or provide equal products by Conspec Systems, Inc. (The CS Group), Muncy, PA; or InPro Jointmaster, Muskego, WI; or alternatives of the quality necessary to meet the specifications.
 - 1. Floor/Floor: PDS-400 Series at elevated slabs extruded aluminum with clear anodized finish; gasket color as selected by Architect;
 - 2. Wall to Wall: EX-K8.

3. Expansion control joints: (#40) in gypsum board ceilings, fascias, and soffits specified under Division 9 Section "Gypsum Board";
4. Acoustical Lay-in Tile: DX-400, dual durometer white PVC extrusion.
5. Exterior Expansion Joint: VS-400, continuous elastoprene seal between aluminum framing, secondary moisture barrier.

2.2 FLOOR THRESHOLDS

- A. Model "X-U4" (4.3 inch sight line), clear anodized aluminum finish, as manufactured by MM Systems Corporation; or equal product by Pemko Manufacturing Company, Memphis, TN; or of alternatives of the quality necessary to meet the specifications. Provide at all doors leading from Gymnasium.

2.3 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the conditions where the Work of this Section will be performed. Correct unsatisfactory conditions prior to proceeding.

3.2 INSTALLATION

- A. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
- B. Install the work of this Section in strict accordance with the manufacturer's standard installation procedures and recommendations.

END OF SECTION 07.9500

SECTION 080671.AD – DOOR HARDWARE SCHEDULE

Hardware Sets

Set: 1.0

Doors: 113A

2 Continuous Hinge	FM300 7'0 EL-CEPTx32D WEP Security Studs	630	MR	087100	⚡
2 Electric Power Transfer	EL-CEPT	630	SU	087100	⚡
1 Mullion	L980S 86"	PC	SA	087100	
1 Rim Exit Device, Storeroom	DG164 55 56 8804 Less Pull	US32D	SA	087100	⚡
1 Rim Exit Device, Exit Only	55 56 8810 EO	US32D	SA	087100	⚡
1 Cylinder	DG1 63 980C1	US10B	SA	087100	
2 Core	DG2 6300	US15	SA	087100	
2 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO	087100	
2 Conc Overhead Stop	1ADJ-X36	630	RF	087100	
1 Pair Door Operators (surface pair)	SW200i (include switches and components)	689	BM	087113	⚡
1 Gasketing	By Door Manufacturer		00		
1 Rain Guard	346C		PE	087100	
2 Sweep	307APK		PE	087100	
1 Threshold	273x3AFG MSES10SS		PE	087100	
1 ElectroLynx Harness (frame)	QC-C1500P		MK	087100	⚡
1 ElectroLynx Harness (door)	QC-C*** (Length / Type as Required)		MK	087100	⚡
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: DURING BUSINESS HOURS: SECURITY SYSTEM UNLOCKS DOORS WHICH ALLOWS FREE ACCESS/ EGRESS. OUTSIDE PUSH BUTTON IS ACTIVATED. PUSHING OUTSIDE PUSH BUTTON ACTIVATES OPERATOR. AFTER HOURS: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER OR REMOTE PUSH BUTTON BY SECURITY VENDOR WILL UNLOCK EXIT DEVICE ALLOWING ACCESS. PUSHING OUTSIDE PUSH BUTTON ACTIVATES OPERATOR. EGRESS IS BY EXIT DEVICE. EMERGENCY ACCESS BY KEY. CONFIRM HARDWARE WITH DOOR MANUFACTURER.

Set: 2.0

Doors: 015A, 111A, 112A, 115A

1 Continuous Hinge	FM300 7'0 EL-CEPTx32D WEP Security Studs	630	MR	087100	⚡
1 Electric Power Transfer	EL-CEPT	630	SU	087100	⚡
1 Rim Exit Device, Storeroom	DG164 55 56 8804 Less Pull	US32D	SA	087100	⚡
1 Core	DG2 6300	US15	SA	087100	
1 Pull	RM201 Mtg-Type 12XHD	US32D- 316	RO	087100	
1 Conc Overhead Stop	1ADJ-X36	630	RF	087100	
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO	087100	
1 Gasketing	By Door Manufacturer		00		
1 Rain Guard	346C		PE	087100	
1 Sweep	307APK		PE	087100	
1 Threshold	273x3AFG MSES10SS		PE	087100	
1 ElectroLynx Harness (frame)	QC-C1500P		MK	087100	⚡
1 ElectroLynx Harness (door)	QC-C*** (Length / Type as Required)		MK	087100	⚡
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER OR INTERCOM BUZZER WILL UNLOCK EXIT DEVICE ALLOWING ACCESS. EGRESS IS BY EXIT DEVICE. EMERGENCY ACCESS BY KEY.

Set: 3.0

Doors: 016A

1 Continuous Hinge	FM300 7'0 EL-CEPTx32D WEP Security Studs	630	MR	087100	⚡
1 Electric Power Transfer	EL-CEPT	630	SU	087100	⚡
1 Rim Exit Device, Storeroom	DG164 55 56 8804 Less Pull	US32D	SA	087100	⚡
1 Core	DG2 6300	US15	SA	087100	

1 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO	087100	
1 Conc Overhead Stop	1ADJ-X36	630	RF	087100	
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO	087100	
1 Gasketing	By Door Manufacturer		00		
1 Rain Guard	346C		PE	087100	
1 Sweep	307APK		PE	087100	
1 Threshold	273x3AFG MSES10SS		PE	087100	
1 ElectroLynx Harness (frame)	QC-C1500P		MK	087100	⚡
1 ElectroLynx Harness (door)	QC-C*** (Length / Type as Required)		MK	087100	⚡
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER OR INTERCOM BUZZER WILL UNLOCK EXIT DEVICE ALLOWING ACCESS. EGRESS IS BY EXIT DEVICE. EMERGENCY ACCESS BY KEY.
CONFIRM HARDWARE WITH DOOR MANUFACTURER.

Set: 4.0

Doors: 113

2 Continuous Hinge	FM300 7'0 WEP Security Studs	630	MR	087100	
2 Electric Power Transfer	EL-CEPT	630	SU	087100	⚡
1 Mullion	L980S 86"	PC	SA	087100	
1 Rim Exit Device, Storeroom	DG164 55 56 8804 Less Pull	US32D	SA	087100	⚡
1 Rim Exit Device, Exit Only	55 56 8810 EO	US32D	SA	087100	⚡
1 Cylinder	DG1 63 980C1	US10B	SA	087100	
1 Core	DG2 6300	US15	SA	087100	
2 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO	087100	
2 Conc Overhead Stop	1ADJ-X36	630	RF	087100	
1 Pair Door Operators (surface pair)	SW200i (include switches and components)	689	BM	087113	⚡
1 Gasketing	By Door Manufacturer		00		
2 Sweep	307APK		PE	087100	

2 ElectroLynx Harness (frame)	QC-C1500P	MK	087100	
2 ElectroLynx Harness (door)	QC-C*** (Length / Type as Required)	MK	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)	SA	087100	
1 Power Supply w/ Distribution Board	AQL4-R8E1	SU	087100	

Notes: DURING BUSINESS HOURS: SECURITY SYSTEM UNLOCKS DOORS WHICH ALLOWS FREE ACCESS/ EGRESS. PUSHING PUSH BUTTON ACTIVATES OPERATOR.
AFTER HOURS: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER OR REMOTE PUSH BUTTON BY SECURITY VENDOR WILL UNLOCK EXIT DEVICE AND ACTIVATE OUTSIDE PUSH BUTTON ALLOWING ACCESS. PUSHING PUSH BUTTON ACTIVATES OPERATOR. EGRESS IS BY EXIT DEVICE. EMERGENCY ACCESS BY KEY.
CONFIRM HARDWARE WITH DOOR MANUFACTURER.

Set: 5.0

Doors: 016

1 Continuous Hinge	CFM__HD1 X LAR	PE	087100	
1 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO	087100
1 Push Bar	RM350 Mtg-Type 12XHD	US32D-316	RO	087100
1 Surface Closer	CPS7500 (brackets and drop plate as required)	689	NO	087100
1 Gasketing	By Door Manufacturer		00	
1 Sweep	307APK	PE	087100	

Set: 6.0

Doors: 020, 026

1 Continuous Hinge	FM300 7'0 WEP Security Studs	630	MR	087100	
1 Asylum/Institutional Lock	DG260 8217 LNL	US26D	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	
1 Electric Strike	1006-LBSM	630	HS	087100	
1 Conc Overhead Stop	1ADJ-X36	630	RF	087100	
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO	087100	
1 Gasketing	2891APK (Head) (TORX)		PE	087100	
1 Gasketing	290APK (Jambs) (TORX)		PE	087100	

1 Sweep	307APK	PE	087100	
1 Threshold	1715A MSES25-2	PE	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)	SA	087100	
1 Position Switch	DPS-M-BK	SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1	SU	087100	⚡

Notes: CARD READERS BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO EITHER CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS OR EGRESS.

Set: 7.0

Doors: 115

2 Continuous Hinge	FM300 7'0 WEP Security Studs	630	MR	087100	
2 Surface Vert Rod Exit, Classroom	DG163 16 NB8713 ETL	US32D	SA	087100	
2 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO	087100	
2 Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100	
2 Electromagnetic Holder	998 X voltage as required	689	RF	087100	⚡
1 Astragal	S771C		PE	087100	
1 Gasketing	S88BL (Head & Jambs)		PE	087100	

Notes: MAGNETIC HOLD OPEN RELEASED WHEN FIRE ALARM IS ACTIVATED.

Set: 8.0

Doors: 002, 114A, 114B

1 Continuous Hinge	FM300 7'0 WEP Security Studs	630	MR	087100	
1 Rim Exit Device, Storeroom	DG260 12 8804 ETL	US32D	SA	087100	
1 Core	DG2 6300	US15	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡
1 Electric Strike	9500-LBSM	630	HS	087100	⚡
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO	087100	
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100	
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100	

1 Gasketing	S88BL (Head & Jambs)	PE	087100	
1 Position Switch	DPS-M-BK	SU	087100	⚡
1 Motion Sensor	XMS	SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1	SU	087100	⚡

Notes: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER OR INTERCOM BUZZER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS. FREE EGRESS BY EXIT DEVICE.

Set: 9.0

Doors: 117

6 Hinge, Full Mortise	TA2714xNRP	US26D	MK	087100
2 Flush Bolt (manual)	555 (metal) / 557 (wood)	US26D	RO	087100
1 Dust Proof Strike	570	US26D	RO	087100
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100
2 Surface Overhead Holder/Stop	10-X46	630	RF	087100
2 Silencer	608		RO	087100

Set: 10.0

Doors: 120

3 Hinge, Full Mortise	TA2714xNRP	US26D	MK	087100
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100
3 Silencer	608		RO	087100

Set: 11.0

Doors: 004, 019

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100
1 Surface Closer	(PR) 7500 (Reg or PA) (brackets and drop plate as required)	689	NO	087100
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100
1 Gasketing	S88BL (Head & Jambs)	PE		087100

Set: 12.0

Doors: 009A

3 Hinge, Full Mortise	TA2714xNRP	US26D	MK	087100
1 Office/Entry Lock	DG163 8205 LNL	US26D	SA	087100
1 Surface Overhead Holder/Stop	10-X46 5258	630	RF	087100
3 Silencer	608		RO	087100

Set: 13.0

Doors: 116

6 Hinge, Full Mortise	TA2714	US26D	MK	087100
2 Flush Bolt (manual)	555 (metal) / 557 (wood)	US26D	RO	087100
1 Dust Proof Strike	570	US26D	RO	087100
1 Passage Set	8215 LNL	US26D	SA	087100
2 Surface Overhead Holder/Stop	10-X46	630	RF	087100
2 Silencer	608		RO	087100

Set: 14.0

Doors: 009B, 109

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Passage Set	8215 LNL	US26D	SA	087100
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100
3 Silencer	608		RO	087100

Set: 15.0

Doors: 014, 015, 018, 111, 118, 119

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Passage Set	8215 LNL	US26D	SA	087100
1 Surface Closer	7500 (brackets and drop plate as required)	689	NO	087100
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100
1 Gasketing	S88BL (Head & Jambes)		PE	087100

Set: 16.0

Doors: 001

3 Hinge, Full Mortise	TA2714xNRP	US26D	MK	087100	
1 Passage Set	8215 LNL	US26D	SA	087100	
1 Surface Closer	(PR) 7500 (Reg or PA) (brackets and drop plate as required)	689	NO	087100	
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100	
1 Electromagnetic Holder	998 X voltage as required	689	RF	087100	⚡
1 Gasketing	S88BL (Head & Jambs)		PE	087100	

Notes: MAGNETIC HOLD OPEN RELEASED WHEN FIRE ALARM IS ACTIVATED.

Set: 17.0

Doors: 014A, 018A

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Privacy Lock (with indicators both sides)	V21 8265 LNL	US26D	SA	087100	
1 Surf Overhead Stop	10-X36	630	RF	087100	
3 Silencer	608		RO	087100	

Set: 18.0

Doors: 005, 104

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Privacy Lock (with indicators both sides)	V21 8265 LNL	US26D	SA	087100	
1 Surface Closer	7500 (brackets and drop plate as required)	689	NO	087100	
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100	
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100	
1 Gasketing	S88BL (Head & Jambs)		PE	087100	

Set: 19.0

Doors: 020A

1 Continuous Hinge	FM300 7'0 WEP Security Studs	630	MR	087100	
1 Asylum/Institutional Lock	DG260 8217 LNL	US26D	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡

1 Electric Strike	1006-LBSM	630	HS	087100	⚡
1 Conc Overhead Stop	1ADJ-X36	630	RF	087100	
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO	087100	
1 Gasketing	S88BL (Head & Jambs)		PE	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READERS BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO EITHER CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS OR EGRESS.

Set: 20.0

Doors: 012

3 Hinge (heavy weight)	T4A3786 x NRP	US26D	MK	087100	
1 Asylum/Institutional Lock	DG260 8217 LNL	US26D	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡
1 Electric Strike	1006-LBSM	630	HS	087100	⚡
1 Conc Overhead Stop	1ADJ-X36	630	RF	087100	
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO	087100	
1 Gasketing	S88BL (Head & Jambs)		PE	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READERS BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO EITHER CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS OR EGRESS.

Set: 21.0

Doors: 025, 109A

3 Hinge (heavy weight)	T4A3786	US26D	MK	087100	
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100	

1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡
1 Electric Strike	1006-LBSM	630	HS	087100	⚡
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100	
3 Silencer	608		RO	087100	
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Motion Sensor	XMS		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Set: 22.0

Doors: 021

3 Hinge (heavy weight)	T4A3786 x NRP	US26D	MK	087100	
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡
1 Electric Strike	1006-LBSM	630	HS	087100	⚡
1 Surface Closer	CLP7500 (brackets and drop plate as required)	689	NO	087100	
3 Silencer	608		RO	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Motion Sensor	XMS		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READERS BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO EITHER CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS OR EGRESS.

Set: 23.0

Doors: 102, 103, 106, 108

3 Hinge (heavy weight)	T4A3786 x NRP	US26D	MK	087100	
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡
1 Electric Strike	1006-LBSM	630	HS	087100	⚡
1 Conc Overhead Stop	6-X36	630	RF	087100	
1 Surface Closer	7500 (brackets and drop plate as required)	689	NO	087100	

3 Silencer	608	RO	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)	SA	087100	
1 Position Switch	DPS-M-BK	SU	087100	⚡
1 Motion Sensor	XMS	SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1	SU	087100	⚡

Notes: CARD READERS BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO EITHER CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS OR EGRESS.

Set: 24.0

Doors: 010, 011, 017, 024, 105, 110

3 Hinge (heavy weight)	T4A3786	US26D	MK	087100	
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡
1 Electric Strike	1006-LBSM	630	HS	087100	⚡
1 Surface Closer	7500 (brackets and drop plate as required)	689	NO	087100	
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100	
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO	087100	
1 Gasketing	S88BL (Head & Jambs)		PE	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Motion Sensor	XMS		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS. FREE EGRESS BY LEVER.

Set: 25.0

Doors: 006, 007, 008, 027

3 Hinge (heavy weight)	T4A3786	US26D	MK	087100	
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	⚡
1 Electric Strike	1006-LBSM	630	HS	087100	⚡

1 Surface Closer	7500 (brackets and drop plate as required)	689	NO	087100	
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100	
1 Electromagnetic Holder	998 X voltage as required	689	RF	087100	⚡
1 Gasketing	S88BL (Head & Jambs)		PE	087100	
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Motion Sensor	XMS		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING ACCESS. FREE EGRESS BY LEVER. MAGNETIC HOLD OPEN RELEASED WHEN FIRE ALARM IS ACTIVATED.

Set: 26.0

Doors: 022, 023

1 Continuous Hinge	FM300 7'0 WEP Security Studs	630	MR	087100	
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100	
1 Electric Strike	1006-LBSM	630	HS	087100	⚡
1 Concealed Closer (Behavioral)	268 CSPS (security package with switch)	EN	SA	087100	
1 Wall Stop	412 TORX	US26D	RO	087100	
3 Silencer	608		RO	087100	
1 Motion Sensor	XMS		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING EGRESS. FREE ACCESS BY LEVER.

Set: 27.0

Doors: 003, 003A

3 Hinge (heavy weight)	T4A3786 x NRP	US26D	MK	087100	
1 Storeroom/Closet Lock	DG163 8204 LNL	US26D	SA	087100	
1 Electric Strike	1006-LBSM	630	HS	087100	⚡

1 Concealed Closer (Behavioral)	268 CSPA (security package with switch)	EN	SA	087100	
1 Wall Stop	412 TORX	US26D	RO	087100	
1 Gasketing	S88BL (Head & Jambs)		PE	087100	
1 Motion Sensor	XMS		SU	087100	⚡
1 Power Supply w/ Distribution Board	AQL4-R8E1		SU	087100	⚡

Notes: CARD READER BY SECURITY VENDOR. PRESENTING AUTHORIZED CREDENTIAL TO CARD READER WILL UNLOCK ELECTRIC STRIKE ALLOWING EGRESS. FREE ACCESS BY LEVER.

Set: 28.0

Doors: 026A

1 Hardware	By Door Manufacturer			00	

Set: 29.0

Doors: MISC

1 Repair Kit	QC-R001		MK	087100	⚡
1 Crimp Tool	QC-R003		MK	087100	⚡
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA	087100	
1 Key Management System	T21		MC	087100	⚡

END OF SECTION 080671

SECTION 080671.PW – DOOR HARDWARE SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section references specification sections relating to commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding Doors.
 - 3. Other doors to the extent indicated.
- B. Commercial door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical and access control door hardware.
 - 3. Electromechanical and access control door hardware power supplies, back-ups and surge protection.
 - 4. Automatic operators.
 - 5. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Door Hardware".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the

manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Refer to "PART 3 – EXECUTION" for required specification sections.

PART 3 - EXECUTION

3.1 DOOR HARDWARE SETS

- A. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies,

conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
 2. The supplier is responsible for handing and sizing all products.
 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.
1. Section 08 71 00 – Door Hardware.
- C. Manufacturer's Abbreviations:
1. MK - McKinney
 2. PE - Pemko
 3. SA - SARGENT
 4. RO - Rockwood
 5. RF - Rixson
 6. NO - Norton
 7. SU - Securitron

Hardware Sets

Set: 1.0

Doors: 101A

1 Continuous Hinge	CFM-HD1		PE
1 Rim Exit Device, Storeroom	DG164 16 8804 Less Pull	US32D	SA
2 Core	DG1 6300	US15	SA
1 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO
1 Conc Overhead Stop	1ADJ-X36	630	RF

1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO
1 Rain Guard	346C		PE
1 Gasketing	2891APK (Head) (TORX)		PE
2 Gasketing	290APK (Jambs) (TORX)		PE
1 Sweep	307APK		PE
1 Threshold	273x3AFG MSES10SS		PE
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA
1 Position Switch	DPS-M-BK		SU ⚡

Notes:

Door position switch to monitor / report open closed status of opening to security system.

Set: 2.0

Doors: 112A, 112F, 113A

1 Continuous Hinge	CFM-HD1		PE
1 Storeroom/Closet Lock	DG164 8204 LNL	US26D	SA
1 Core	DG1 6300	US15	SA
1 Conc Overhead Stop	1ADJ-X36	630	RF
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO
1 Rain Guard	346C		PE
1 Gasketing	2891APK (Head) (TORX)		PE
1 Gasketing	290APK (Jambs) (TORX)		PE
1 Sweep	307APK		PE
1 Threshold	273x3AFG MSES10SS		PE
1 Wiring Diagram	WD-SYSPK (Elevations and Point to Point)		SA
1 Position Switch	DPS-M-BK		SU ⚡

Notes:

Door position switch to monitor / report open closed status of opening to security system.

Set: 3.0

Doors: 101B

3 Hinge (heavy weight)	T4A3786	US26D	MK
1 Push Bar	8893	US32D	SA
1 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO
1 Surface Closer	PR7500 (brackets and drop plate as required)	689	NO
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO

Set: 4.0

Doors: 106, 107, 109

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Storeroom/Closet Lock	DG164 8204 LNL	US26D	SA
1 Core	DG1 6300	US15	SA
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO
3 Silencer	608		RO

Set: 5.0

Doors: 111

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Storeroom/Closet Lock	DG164 8204 LNL	US26D	SA
1 Core	DG1 6300	US15	SA
1 Surface Closer	7500 (brackets and drop plate as required)	689	NO
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO
3 Silencer	608		RO

Set: 6.0

Doors: 103, 104, 105

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Office/Entry Lock	DG164 8205 LNL	US26D	SA

1 Core	DG1 6300	US15	SA
1 Surface Overhead Holder/Stop	10-X46 5258	630	RF
3 Silencer	608		RO

Set: 7.0

Doors: 113B

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Passage Set	8215 LNL	US26D	SA
1 Surface Closer	CPS7500 (brackets and drop plate as required)	689	NO
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO
1 Gasketing	S88BL (Head & Jamb)		PE
1 Gasketing	2891APK (Head) (TORX)		PE
2 Gasketing	290APK (Jamb) (TORX)		PE
1 Sweep	307APK		PE
1 Threshold	1715A MSES25-2		PE

Set: 8.0

Doors: 108A, 108B, 110

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Privacy Lock (with indicators both sides)	V21 8265 LNL	US26D	SA
1 Surface Closer	7500 (brackets and drop plate as required)	689	NO
1 Kick Plate	K1050 10" high BEV CSK	US32D	RO
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO
1 Gasketing	S88BL (Head & Jamb)		PE

Set: 9.0

Doors: 102

3 Hinge (heavy weight)	T4A3786	US26D	MK
1 Push Plate	70C-RKW	US32D	RO
1 Pull Plate	BF 110x70C	US32D	RO
1 Surface Closer	7500 (brackets and drop plate as required)	689	NO

1 Kick Plate	K1050 10" high BEV CSK	US32D	RO
1 Wall/ Floor Stop	RM861 / RM850	US32D	RO
3 Silencer	608		RO

Set: 10.0

Doors: 112B, 112C, 112D, 112E, 113C

1 Hardware	By Door Manufacturer	00

END OF SECTION 080671

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Standard and custom hollow metal doors and frames.
 - 2. Steel sidelight, borrowed light and transom frames.
 - 3. Louvers installed in hollow metal doors.
 - 4. Light frames and glazing installed in hollow metal doors.

- B. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

- 1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
 - 2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
 - 3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
 - 4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
 - 5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
 - 6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
 - 9. 10. SDI-113 Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door & Frame Assemblies.
 - 10. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
 - 11. ASTM C1199 - Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
 - 12. ASTM E1423 - Practice for Determining Steady State Thermal Transmittance of Fenestration Systems.
 - 13. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
 - 14. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
 - 15. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
 - 16. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.

17. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
18. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
19. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- C. Shop Drawings: Include the following:
 1. Elevations of each door design.
 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of anchorages, joints, field splices, and connections.
 6. Details of accessories.
 7. Details of moldings, removable stops, and glazing.
 8. Details of conduit and preparations for power, signal, and control systems.
- D. Samples for Verification:
 1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40" above sill) or UL 10C.
 1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
 2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point

of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.

3. Smoke Control Door Assemblies: Comply with NFPA 105.

- a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.

E. Storm Shelter Openings: Provide complete door systems for hurricane or tornado storm shelters, and other areas of refuge, complying and tested according to ICC 500 (2014/2020), ICC/NSSA Standard for the Design and Construction of Storm Shelters.

- 1. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

F. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

- 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical disciplines are responsible for the product data integration and data reliability of their Work into the coordinated BIM applications.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:
 - 1. CECO Door Products (C).
 - 2. Curries Company (CU).
 - 3. Pioneer Industries (PI).

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

- B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
 2. Core Construction: Manufacturer's standard polystyrene. Where indicated, provide doors fabricated as thermal-rated assemblies with a minimum R-value of 2.8 or better.
 3. Core Construction: Manufacturer's thermally enhanced QMax core. Where indicated provide doors fabricated as thermal-rated assemblies with a minimum thermal rating of 0.35 BTU/hr-ft²-F.
 4. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053-inch - 1.3-mm) thick steel, Model 2.
 5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
 6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
 7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, or one-piece polystyrene core, securely bonded to both faces.
 - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
 3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
 4. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
 5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
 6. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- D. Manufacturers Basis of Design:
1. Curries Company (CU) - Polystyrene Core - 707 Series.
 2. Curries Company (CU) - QMax Core - 707 Series.

2.4 HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Thermal Break Frames: Subject to the same compliance standards and requirements as standard hollow metal frames. Tested for thermal performance in accordance with NFRC 102, and resistance to air infiltration in accordance with NFRC 400. Where indicated provide thermally broken frame profiles available for use in both masonry and drywall construction. Fabricate with 1/16" positive thermal break and integral vinyl weatherstripping.
- C. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.
 - 1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
 - 2. Frames: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.
 - 3. Manufacturers Basis of Design:
 - a. Curries Company (CU) - Mercury 3 Thermal Break TQ Series.
- D. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
 - 1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
 - 2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
 - 3. Manufacturers Basis of Design:
 - a. Curries Company (CU) - CM Series.
 - b. Curries Company (CU) - M Series.
- E. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- F. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 - 2. Existing Masonry Type: Provide steel pipe spacers welded to plate reinforcing at jamb stops or hat shaped formed strap spacers welded to jamb near the stop. Drill jamb stop and strap spacers for flat head bolts to pass through frame and spacers.
 - 3. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.6 LIGHT OPENINGS AND GLAZING

- A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.
- B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.
- C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.
- D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

2.7 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.8 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.
- C. Hollow Metal Doors:
 - 1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
 - 2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
 - 3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
 - 4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches on-center and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
 - b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".

11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.
- E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
 1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.9 STEEL FINISHES

- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.
- E. Verify tolerances against manufacturers installations instructions for tornado and hurricane storm shelter openings.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
 - 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
 - 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
 - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

3.5 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
 - 1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

END OF SECTION 081113

SECTION 08.1416 – FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes:
 - 1. Solid core doors with wood veneer faces.
 - 2. Factory finishing wood doors.
 - 3. Factory fitting wood doors to frames and factory machining for hardware.
 - 4. Light frames and glazing installed in wood doors.
- B. Related Sections:
 - 1. Division 08 Section "Hollow Metal Doors and Frames".
 - 2. Division 08 Section "Glazing".
 - 3. Division 08 Section "Door Hardware".
- C. Standards and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ANSI A208.1 – Wood Particleboard.
 - 3. Intertek Testing Service (ITS Warnock Hersey) - Certification Listings for Fire Doors.
 - 4. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
 - 5. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
 - 6. UL 10C - Positive Pressure Fire Tests of Door Assemblies; UL 1784 - Standard for Air Leakage Tests of Door Assemblies.
 - 7. Window and Door Manufacturers Association - WDMA I.S.1-A Architectural Wood Flush Doors

1.2 SUBMITTALS

- A. Product Data: For each type of door indicated. Include details of core and edge construction, louvers, trim for openings, and WDMA I.S.1-A classifications. Include factory finishing specifications.
- B. Shop Drawings shall include:
 - 1. Indicate location, size, and hand of each door.
 - 2. Indicate dimensions and locations of mortises and holes for hardware.
 - 3. Indicate dimensions and locations of cutouts.
 - 4. Indicate requirements for veneer matching.
 - 5. Indicate location and extent of hardware blocking.
 - 6. Indicate construction details not covered in Product Data.
 - 7. Indicate doors to be factory finished and finish requirements.
 - 8. Indicate fire protection ratings for fire rated doors.

- C. Samples for Initial Selection: For factory finished doors.
 - 1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.
 - 2. Corner sections of doors, 8 by 10 inches, with door faces and edges representing actual materials to be used.
 - a. Provide samples for each species of veneer and core material.
 - b. Finish veneer faced door samples with same materials proposed for factory finished doors.
 - 3. Frames for light openings, 6 inches long, for each material, type, and finish required.
- D. Warranty: Provide sample of manufacturer's warranty.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, latest edition, "Industry Standard for Architectural Wood Flush Doors".
- C. Fire Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing at positive pressure according to NFPA 252 (neutral pressure at 40" above sill) or UL10C.
 - 1. Oversize Fire Rated Door Assemblies: For units exceeding sizes of tested assemblies provide manufacturer's construction label, indicating compliance to independent 3rd party certification agency's procedure, except for size.
 - 2. Temperature Rise Limit: Where required and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire test exposure.
 - 3. Smoke Control Door Assemblies: Comply with NFPA 105.
 - 1) Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.
- D. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for receiving, handling, and installing flush wood doors.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.

- B. Package pre-finished doors individually in plastic bags and wrap bundles of doors in plastic sheeting.
- C. Mark each door on top rail with opening number used on Shop Drawings.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weather tight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.6 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in wood face veneers exceeding 0.01 inch in a 3-inch span.
 - 2. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.
 - 3. Warranty Period for Solid Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 DOOR CONSTRUCTION – GENERAL

- A. WDMA I.S.1-A Performance Grade: Extra Heavy Duty; Aesthetic Grade: Premium.
- B. Fire Rated Doors: Provide construction and core as needed to provide fire ratings indicated.
 - 1. Category A Edge Construction: Provide fire rated door edge construction with intumescent seals concealed by outer stile (Category A) at 45, 60, and 90 minute rated doors. Comply with specified requirements for exposed edges.
 - 2. Pairs: Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
 - a. Provide fire retardant stiles that are listed and labeled for applications indicated without formed steel edges and astragals.
 - b. Where required for concealed hardware, provide formed steel edges and astragals with intumescent seals. Finish steel edges and astragals with baked enamel.

2.2 CORE CONSTRUCTION

A. Structural Composite Lumber Core Doors:

1. Structural Composite Lumber: Engineered hardwood composite wood products tested in accordance with WDMA I.S.1A, Testing Cellulosic Composite Materials for Use in Fenestration Products containing no added Urea Formaldehyde.

B. Fire Resistant Composite Core Doors:

1. Core: Non-combustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire protection rating indicated.
2. Blocking: As indicated under article "Blocking".
3. Edge Construction: At hinge stiles, provide laminated edge construction with improved screw holding capability and split resistance. Comply with specified requirements for exposed edges.

2.3 BLOCKING

A. Non-Fire-Rated Doors:

1. Provide blocking as indicated below:
 - a. HB1: 5 inch in doors indicated to have closers and overhead stops.
 - b. HB4: Two 5 inch x 14 inch lock blocking, in doors indicated to have exit devices.
 - c. HB5: Two 5 inch x 14 inch corner blocking, in doors indicated to have flush bolts.

B. Fire Rated Doors:

1. Provide blocking as indicated below:
 - a. HB1: 5 inch in doors indicated to have closers and overhead stops.
 - b. HB4: Two 5 inch x 14 inch lock blocking in doors indicated to have exit devices.
 - c. HB5: Two 5 inch x 14 inch corner blocking in doors indicated to have flush bolts.

2.4 VENEERED DOORS FOR TRANSPARENT FINISH

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ASSA ABLOY Wood Doors (GR): GPD Series.
2. Eggers Industries (EG): Premium Series.
3. VT Industries (VT): Artistry Series.

B. Interior Solid Core Doors:

1. Grade: Premium.

2. Faces: Veneer grades as noted below; veneer minimum 1/50-inch (0.5mm) thickness at moisture content of 12% or less.
 - a. Plain Sliced Red Oak, #375 SS1, A grade faces.
3. Match between Veneer Leaves: Book match.
4. Assembly of Veneer Leaves on Door Faces:
 - a. Running Match.
5. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
6. Transom Match: Continuous match.
7. Vertical Edges: Matching same species as faces. Wood or composite material, one piece, laminated, or veneered. Minimum requirements per WDMA section P-1, Performance Standards for Architectural Wood Flush Doors.
8. Horizontal Edges: Solid wood or structural composite material meeting the minimum requirements per WDMA section P-1, Performance Standards for Architectural Wood Flush Doors
9. Construction: Five plies. Stiles and rails are bonded to core, then entire unit sanded before applying face veneers.
10. At doors over 40% of the face cut-out for lights and or louvers, furnish engineered composite lumber core.

2.5 LIGHT FRAMES AND GLAZING

- A. Wood Beads for Light Openings in Wood Doors up to and including 20-minute rating:
 1. Wood Species: Same species as door faces.
 2. Profile:
 - a. M1 Flush Bead.
 - b. At wood core doors with 20-minute fire protection ratings, provide wood beads and metal glazing clips approved for such use.
- B. Metal Frames for Light Openings in Fire Rated Doors over 20-minute Rating: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated.
 1. Manufacturers:
 - a. Air Louver (LV).
 - b. All Metal Stamping (AP).

- c. Anemostat (AN).
- d. Pemko (PE).

- C. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with the flush wood door manufacturer's written instructions.

2.6 FABRICATION

- A. Factory fit doors to suit frame opening sizes indicated.
 - 1. Comply with requirements in NFPA 80 for fire rated doors.
 - 2. Undercut: As required per manufacturer's templates and sill condition.
- B. Factory machine doors for hardware that is not surface applied. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
 - 1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
 - 2. Metal Astragals: Factory machine astragals and formed steel edges for hardware for pairs of fire rated doors.
- C. Openings: Cut and trim openings through doors in factory.
 - 1. Light Openings: Trim openings with moldings of material and profile indicated.
 - 2. Glazing: Comply with applicable requirements in Division 08 Section "Glazing."
- D. Electrical Raceways: Provide flush wood doors receiving electrified hardware with concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the through wire transfer hardware or wiring harness specified in hardware sets in Division 08 "Door Hardware". Wire nut connections are not acceptable.

2.7 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 - 1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
- B. Transparent Finish: Provide a clear protective coating over the wood veneer allowing the natural color and grain of the selected wood species to provide the appearance specified. Stain is applied to the wood surface underneath the transparent finish to add color and design flexibility.
 - 1. Finish: Meet or exceed WDMA I.S. 1A TR8 UV Cured Acrylated Polyester finish performance requirements.
 - 2. Staining:
 - a. As selected by Architect from manufacturer's full range.

3. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames before hanging doors.
 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jams.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 8 Section "Door Hardware."
- B. Installation Instructions: Install doors and frames to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.
 1. Install fire rated doors in corresponding fire rated frames according to NFPA 80.
- C. Factory Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- E. Field modifications to doors shall not be permitted, except those specifically allowed by manufacturer or fire rating requirements.

3.3 ADJUSTING

- A. Operation: Re-hang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

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 the following:
 - 1. Access doors and frames.
- B. Related Sections:
 - 1. Division 04 Section "Unit Masonry" for anchoring and grouting access door frames set in masonry construction.
 - 2. Division 09 Section "Gypsum".
 - 3. Division 09 Section "Painting" for field painting access doors and frames.

1.3 SUBMITTALS

- A. Product Data: For each type of access door and frame indicated. Include construction details, fire ratings, materials, individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of access door(s) and frame(s) through one source from a single manufacturer.
- B. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics per the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. NFPA 252 for vertical access doors and frames.
 - 2. ASTM E 119 for horizontal access doors and frames.
- C. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

- A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

- A. Fire-Rated, Flush Access Doors with Concealed Flanges:
1. Basis-of-Design Product: Nystrom's uninsulated fire-rated access door (UT).
 2. Alternate Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Babcock-Davis; A Ciera Products Co.
 - b. J. L. Industries, Inc.
 - c. Karp Associates, Inc.
 - d. Larsen's Manufacturing Company.
 - e. Milcor Inc.
 3. Assembly Description: Fabricate door to fit flush to frame, uninsulated. Provide self-latching door with automatic closer and interior latch release. Provide manufacturer's standard-width exposed flange, proportional to door size.
 4. Size: As indicated on Drawings.
 5. Locations: Wall and ceiling access doors are required:
 - a. Where specifically scheduled or noted on Drawings.
 - b. Where service access is required by Code.
 - c. Where service access is required for serviceable, operable, adjustable or resettable mechanical, plumbing and electrical items.
 6. Fire-Resistance Rating: Not less than that of adjacent construction.
 7. Uncoated Steel Sheet for Door: 14 gage.
 - a. Finish: Factory prime, Contractor to field paint as directed by Architect.
 8. Frame Material: Minimum of 16 gage steel, finish to match door.
 9. Hinges: Manufacturer's standard concealed.
 10. Hardware: Flush, key operated cylinder, provided by access door manufacturer.
 11. Anchors: Masonry
- B. Types: Access doors in types required for specific installations (e.g. masonry, gypsum wallboard, suspended ceiling, etc.). Anchors and accessories as required to fasten securely in place.
- C. Quantities: Provide as indicated on the Drawings, to be located as required by field conditions. Actual sizes furnished will be adjusted for project requirements.

2.2 ACCESS DOOR AND FRAMES FOR ATTIC ACCESS

- A. Fire-Rated, Insulated, Upward Swinging Attic Access Doors with Drywall Flanges:

1. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with exposed flange, self-closing door, and concealed hinge and automatic spring closer.
2. Locations: Above suspended ceiling at underside of truss bottom chord at locations as indicated on Drawings.
3. Door Size: 36 x 36 inches.
4. Fire Resistance Rating: 1-hour.
5. U-Value: U-0.37 maximum.
6. Metallic-Coated Steel Sheet for Door: 20 gauge, galvalume steel.
7. Finish: Factory baked-enamel finish; white.
8. Frame Material: 16 gauge, finish to match Door.
9. Latch and Lock: Self-latching door hardware, cylinder lock operated by key, with inside panel release.
10. Basis of Design: BA-FD2CI-36-36 by Best Access Doors

2.3 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
 1. Exposed Flanges: Nominal 1 to 1-1/2 inches wide around perimeter of frame.
 2. Provide mounting holes in frame for attachment of masonry anchors. Furnish adjustable metal masonry anchors.
- D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
- E. Extruded Aluminum: After fabrication, apply manufacturer's standard protective coating on aluminum that will come in contact with concrete.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.
- C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING AND CLEANING

- A. Adjust doors and hardware after installation for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION

SECTION 083323 - COILING DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Electric operated overhead coiling garage doors.
 - 2. Electric operated overhead fire-rated coiling counter doors.
- B. Related Sections:
 - 1. 05 50 00 Metal Fabrications. Door opening jamb and head members.
 - 2. 06 10 00 Rough Carpentry. Door opening jamb and head members.
 - 3. 08 31 00 Access Doors and Panels. Access doors.
 - 4. 08 70 00 Hardware.
 - 5. Division 26. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, and installation of control station and wiring.

1.2 SUBMITTALS

- A. Reference Section 01 33 00 Submittal Procedures; submit the following items:
 - 1. Product Data
 - 2. Shop Drawings
 - a. Provide drawings indicating guide details, head and jamb conditions, anchorage, accessories, finish colors, patterns and textures, operator mounts and other related information.
 - b. Regulatory Requirements and Approvals: Provide shop drawings in compliance with local Authority Having Jurisdiction (AHJ).
 - 3. Certifications
 - a. Submit manufacturer's certificate that products meet or exceed specified requirements.
 - b. Submit installer qualifications.
 - 4. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
 - 5. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- B. Closeout Submittals:
 - 1. Operation and Maintenance Manual.
 - 2. Certificate stating that installed materials comply with this specification

1.3 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer Qualifications: Company with a minimum of five-year experience in producing the specified type of doors.
 - 2. Installer Qualifications: Utilize an authorized installer of door manufacturer who has demonstrated experience on projects of similar size and complexity.

1.4 DELIVERY STORAGE AND HANDLING

- A. Reference Section 01 66 00 Product Storage and Handling Requirements
- B. Follow manufacturer's instructions

1.5 WARRANTY

- A. Standard Warranty: Two year or 300,000 cycles, whichever comes first, from date of shipment against defects in material and workmanship, on mechanical components, operator and control panel.
- B. Maintenance: Submit for owner's consideration and acceptance of a maintenance service agreement for installed products

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design Manufacturer: Raynor which is located at: 1101 East River Rd. P. O. Box 448 ; Dixon, IL 61021-0448; Toll Free Tel: 800-4-RAYNOR; Tel: 815-288-1431; Fax: 888-598-4790; Email: architectsupport@raynor.com; Web: www.raynor.com, or comparable product by one of the following:
 - 1. CornellCookson, LLC
 - 2. Overhead Door Company
 - 3. Clopay Corporation

2.2 ELECTRIC OPERATED OVERHEAD COILING GARAGE DOOR

- A. Basis of Design Model: DuraCoil as manufactured by Raynor Garage Doors:
 - 1. Doors:
 - a. Operation: Provide Doors designed for electric motor operation
 - b. Mounting: Door guide mounting configuration
 - 1) Interior face of wall on each side of door opening.
 - c. International Energy Conservation Code (IECC) Requirements:

- 1) Air Infiltration – Maximum air leakage of 1.00 cfm/ft is required. Testing shall be in accordance with DASMA 105 test procedure.
 - 2) Raynor provides an air leakage rating of .47 cfm/ft
 - 3) Maximum U-Factor of .90 is required and shall be tested to DASMA 105.
 - d. Sound Transmission Class (STC) rating
 - 1) STC rating of 22 required on an insulated door.
2. Curtain: Interlocking roll-formed slats as specified below.
 - a. Slat Types:
 - 1) Insulated flat slats with 24 gauge backer
 - a) Steel 24 gauge
 - b) Insulation: Polyisocyanurate
 - b. Material:
 - 1) Commercial quality hot-dipped galvanized (G-90) steel in accordance with ASTM A-653.
 - c. Color and Finish:
 - 1) ArmorBrite Powdercoat finish.
 - a) Color to be selected by Architect.
3. Endlocks: Zinc-plated malleable cast iron endlocks fastened with two zinc-plated steel rivets.
4. Bottom Bar: two angles, minimum 1-1/2 inches by 1-1/2 inches by 1/8 inch (38.1 mm x 38.1 mm x 3.2 mm) with single-contact type bottom astragal.
 - a. Material:
 - 1) Structural steel angles.
 - b. Color and finish:
 - 1) ArmorBrite Powdercoat finish.
 - a) Color to be selected by Architect.
5. Guide Assemblies: Three structural angles, minimum 3 inches by 2 inches by 3/16 inch (76 mm by 50.8 mm by 4.8 mm) and fitted with removable curtain stops.
 - a. Material and Finish:
 - 1) ArmorBrite Powdercoat finish.
 - a) Color to be selected by Architect.
6. Guide Weatherseal: Seals to inhibit air infiltration between the guide and the curtain.
 - 1) EPDM rubber with an aluminum retainer
7. Counterbalance: Provide counterbalance mechanism with helical torsion springs, grease packed and mounted on a continuous steel torsion shaft.
 - 1) Standard 15,000 cycles.
8. Brackets: 3/16 inch (4.8 mm), minimum, steel plate, attached to wall angle of guide assembly with 1/2 inch (12.7 mm) diameter Grade 5 bolts. Inside of drive bracket fitted with sealed ball bearing.
 - a. Material and Finish:
 - 1) ArmorBrite Powdercoat finish.

- a) Color to be selected by Architect.
- 9. Enclosures:
 - a. Hood Type: Square Hood
 - b. Bracket Covers: Covers to enclose door mechanisms.
 - c. Material:
 - 1) 24 gauge steel (0.022 inch minimum thickness) commercial quality hot-dipped galvanized steel in accordance with ASTM A-653.
 - d. Color and Finish:
 - 1) ArmorBrite Powdercoat finish.
 - a) Color to be selected by Architect.
 - e. Hood baffle: Provide hood baffle with a rubber seal to inhibit air infiltration through hood cavity
- 10. Header Seal: Provide a "Z" shape aluminum retainer with EDPM rubber to inhibit air infiltration between the header and the curtain.
- 11. Locks: Furnish door system with the following:
 - a. Cylinder Lock for Motor Operated Doors: Provide interlock switch with cylinder lock.
- B. Electric Operators
 - 1. ControlHoist (UL Listed) as manufactured by Raynor Garage Doors:
 - a. Model: Raynor ControlHoist Optima:
 - 1) Motor Horsepower Rating: Per the manufacturer's recommended size for the door.
 - 2) Duty Cycle: 30 cycles/hour or 300 cycles/day.
 - 3) Control Wiring: Solid state circuitry with provisions for connection of a monitored reversing device, external radio control hook-up and maximum run timer. Provisions for timers to close and mid stop and lock bar sensor capability.
 - a) Provide three button momentary contact "open-stop", constant pressure on close (can be changed to momentary to close).
 - b) Custom wiring.
 - c) Monitored electric reversing edge on door.
 - d) Monitored photo electric eyes mounted on jambs.

2.3 ELECTRIC OPERATED OVERHEAD FIRE-RATED COILING COUNTER DOORS

- A. Model: FireCurtain as manufactured by Raynor Garage Doors:
 - 1. Doors:
 - a. Operation: Provide Doors designed for tube motor operation
 - b. Mounting: Door guide mounting configuration
 - 1) To face of wall on each side of door opening.
 - c. Fire Resistance Rating:
 - 1) 60-MINUTE, listed by Underwriters Laboratories (UL).
 - d. Smoke Control Label: Provide door with a type "S" label, air leakage rating not greater than 3.0 CFM per Sq. Ft.

2. Curtain: Interlocking slats as specified below. Endlocks shall be attached to each of alternate slat to prevent lateral movement.
 - a. Slat Type:
 - 1) Roll-formed flat slat 22 gauge steel (0.030 inch minimum thickness).
 - b. Material:
 - 1) Stainless steel in accordance with ASTM A-240, type 304.
 - c. Color and Finish:
 - 1) ArmorBrite Powdercoat finish.
 - a) Color: Custom as selected by Architect.
3. Endlocks: Zinc-plated stamped steel endlocks fastened with zinc-plated steel rivets.
4. Bottom Bar: Tubular type, with 1/4 inch (6.3) thick protective strip to cushion impact of bottom bar on countertop.
 - a. Material:
 - 1) Roll-formed 14 gauge stainless steel (0.075 inch minimum thickness).
 - b. Color and Finish:
 - 1) Steel bottom bar to receive ArmorBrite Powdercoat finish.
 - 2) Color: Custom as selected by Architect.
5. Guide Assemblies: Guides shall be provided in the same material and finish as the curtain and fitted with removable curtain stops.
 - a. Material and Finish:
 - 1) 13 gauge galvanized steel (0.086 inch minimum thickness). to receive ArmorBrite Powdercoat finish.
 - 2) Color: Custom as selected by Architect.
 - b. Guide Smoke Seals: Seals to inhibit smoke infiltration between the guide and the curtain.
 - 1) Brush seal with an aluminum retainer attached to the guide assembly.
6. Counterbalance:
 - a. Counterbalance: Provide counterbalance mechanism with helical torsion springs, grease packed and mounted on a continuous steel torsion shaft.
 - 1) Standard 7,500 cycles.
7. Brackets: Mounting brackets shall be 10 gauge galvanized steel (0.130 inch minimum thickness) attached to the guide assembly.
8. Automatic Closing Device: Automatic closing of rolling fire shutter door under a fire condition to be initiated by the following:
 - a. Fusible links.
9. Detection Type: Smoke detection used in conjunction with the automatic closing device type to initiate the automatic closing of a rolling fire shutter door shall be the following:
 - a. Photoelectronic with heat sensor detector.
10. Header Smoke Seal: Provide a brush seal to inhibit smoke infiltration between the header and the curtain.
11. Locks: Furnish door system with the following:

- a. Locking Bar: For push-up doors and doors operated with hand crank, locks to be thumb turn cylinders and bars to engage both guides.
- B. Electric Operators
 - 1. Fire Eclipse Tube Motor as provided by Raynor Garage Doors:
 - a. Tube motor to be 115 volt, single phase with toggle switch for constant pressure open/close operation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Commencement of work by installer is acceptance of substrate

3.2 INSTALLATION

- A. General: Install grille and operating equipment with necessary hardware, anchors, inserts, hangers and supports
- B. Follow manufacturer's installation instructions

3.3 ADJUSTING

- A. Following completion of installation, including related work by others, lubricate, test, and adjust grilles for ease of operation, free from warp, twist, or distortion

3.4 CLEANING

- A. Clean surfaces soiled by work as recommended by manufacturer
- B. Remove surplus materials and debris from the site

3.5 DEMONSTRATION

- A. Demonstrate proper operation to Owner's Representative
- B. Instruct Owner's Representative in maintenance procedures

END OF SECTION

SECTION 083613 - SECTIONAL DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Insulated Sectional Overhead Doors.
- B. Electric Operators and Controls.
- C. Operating Hardware, tracks, and support.

1.2 RELATED SECTIONS

- A. Section 033000 - Cast-In-Place Concrete: Prepared opening in concrete. Execution requirements for placement of anchors in concrete wall construction.
- B. Section 042000 - Unit Masonry: Prepared opening in masonry. Execution requirements for placement of anchors in masonry wall construction.
- C. Section 055000 - Metal Fabrications: Steel frame and supports.
- D. Section 061053 – Miscellaneous Rough Carpentry: Rough wood framing and blocking for door opening.
- E. Section 079200 - Joint Sealers: Perimeter sealant and backup materials.
- F. Section 087100 - Door Hardware: Cylinder locks.
- G. Section 099100 - Painting: Field painting.
- H. Section 16150 - Wiring Connections: Electrical service to door operator.

1.3 REFERENCES

- A. [ANSI/DASMA 102](#) - American National Standard Specifications for Sectional Overhead Type Doors.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.
 - 1. Refer to Structural Drawings.
- B. Wiring Connections: Requirements for electrical characteristics.
 - 1. 230 volts, three phase, 60 Hz.

- C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. Operation and Maintenance Data.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Protect materials from exposure to moisture until ready for installation.
- C. Store materials in a dry, ventilated weathertight location.

1.8 PROJECT CONDITIONS

- A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: sales@overheaddoor.com.
- B. Acceptable Manufacturers:
1. Assa Abloy Entrance Systems
 2. Industrial Door Solutions
 3. Wayne-Dalton
 4. American Garage Door Supply Inc.

2.2 INSULATED SECTIONAL OVERHEAD DOORS

- A. Insulated Steel Sectional Overhead Doors: 470 Series Insulated Steel Doors by Overhead Door Corporation. Units shall have the following characteristics:
1. Door Assembly: Rigid steel construction; fully insulated on the inside face with continuous steel backing on the inside face. Fabricated with steel end stiles and tongue and groove sections.
 - a. Panel Thickness: 2 inches (51 mm).
 - b. Exterior Surface: Ribbed.
 - c. Exterior Steel: 26 gauge, hot-dipped galvanized with an embossed simulated wood grain texture.
 - d. Interior Steel: 29 gauge, hot-dipped galvanized
 - e. Springs:
 - 1) 100,000 cycles.
 - f. Insulation: Polystyrene.
 - g. Thermal Values: Assembly U-value of 0.31 maximum.
 - h. Partial Glazing of Steel Panels:
 - 1) Tempered Insulated Glazing – Size & Location as Indicated on Drawings.
 2. Finish and Color: Two coat baked-on polyester. Color as follows:
 - a. Custom Color as selected by Architect to match RAL #
 3. Wind load Design: Provide to meet the Design/Performance requirements specified.
 4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
 5. Lock:
 - a. Keyed lock with interlock switch for automatic operator.
 - b. Locking mechanism designed to maintain security for exterior while permitting break out when impacted from the inside.
 6. Weatherstripping:
 - a. Flexible bulb-type strip at bottom section.
 - b. Flexible Jamb seals.
 - c. Flexible Header seal.
 7. Track: Provide Overhead rack
 8. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.

- a. Entrapment Protection: Required for momentary contact, includes radio control operation.
 - 1) Pneumatic sensing edge up to 18 feet (5.5 m) wide. Constant contact only complying with UL 325/2010.
- b. Operator Controls:
 - 1) Push-button operated control stations with open, close, and stop buttons.
 - 2) Surface mounting.
 - 3) Interior location.
- c. Special Operation:
 - 1) Pull switch.
 - 2) Vehicle detector operation.
 - 3) Door timer operation.
 - 4) Commercial light package.
 - 5) Explosion and dust ignition proof control wiring.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until openings have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.
- D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.
- B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.
- C. Anchor assembly to wall construction and building framing without distortion or stress.
- D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- E. Fit and align door assembly including hardware.

- F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.4 CLEANING AND ADJUSTING

- A. Adjust door assembly to smooth operation and in full contact with weatherstripping.
- B. Clean doors, frames and glass.
- C. Remove temporary labels and visible markings.

3.5 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.
- B. Protect installed products until completion of project.
- C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONT

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. Exterior and interior storefront framing.
 - 2. Exterior and interior manual-swing entrance doors and door-frame units.

1.3 DEFINITIONS

- A. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
 - 1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 - 2. Dimensional tolerances of building frame and other adjacent construction.
 - 3. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferring to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
 - d. Glazing-to-glazing contact.
 - e. Noise or vibration created by wind and by thermal and structural movements.
 - f. Loosening or weakening of fasteners, attachments, and other components.
 - g. Sealant failure.
 - h. Failure of operating units.

- B. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft.
- C. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
- D. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
 - 2. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
- E. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 60 when tested according to AAMA 1503.
- F. Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having an average U-factor of not more than 0.57 Btu/sq. ft. x h x deg F when tested according to AAMA 1503.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.
- B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
- C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems, indicating compliance with performance requirements.
- E. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.
- F. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.
- C. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
 - 1. Do not revise intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions are proposed, submit comprehensive explanatory data to Architect for review.
- D. Accessible Entrances: Comply with applicable provisions in ICC/ANSI A117.1.
- E. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.
- F. Welding Qualifications: Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code - Aluminum."

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.
- B. Hardware: Contractor shall provide this subcontractor with approved hardware information and template drawings for doors to be installed in aluminum frames. Contractor will be completely responsible for coordination between the hardware supplier and this subcontractor.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration caused by thermal movements.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

- d. Adhesive or cohesive sealant failures.
 - e. Water leakage through fixed glazing and framing areas.
 - f. Failure of operating components.
- 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrances and storefronts.
- B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Thermal stresses transferring to building structure.
 - b. Glass breakage.
 - c. Noise or vibration created by wind and thermal and structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- C. Structural Loads:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
- D. Deflection of Framing Members: At design wind pressure, as follows:
 - 1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
 - 2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.
 - a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.

3. Cantilever Deflection: Where framing members overhang an anchor point, as follows:
 - a. Perpendicular to Plane of Wall: No greater than $1/240$ of clear span plus $1/4$ inch for spans greater than 11 feet 8-1/4 inches or $1/175$ times span, for spans less than 11 feet 8-1/4 inches.
- E. Structural: Test according to ASTM E 330 as follows:
 1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
 2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 3. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- F. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
 1. Fixed Framing and Glass Area:
 - a. Maximum air leakage of 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft.
 2. Entrance Doors:
 - a. Pair of Doors: Maximum air leakage of 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
 - b. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
- G. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:
 1. No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
- H. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:
 1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
 2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.
- I. Interstory Drift: Accommodate design displacement of adjacent stories indicated.
 1. Design Displacement: As indicated on Drawings.

2. Test Performance: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.4 at design displacement and 1.5 times the design displacement.
- J. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.6 at design displacement and 1.5 times the design displacement.
 2. Vertical Interstory Movement: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.7 at design displacement and 1.5 times the design displacement.
- K. Energy Performance: Certify and label energy performance according to NFRC as follows:
 1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than the value indicated in the 2009 International Code Council's International Energy Conservation Code for aluminum-framed window systems, entrance doors, and windows.
 2. Solar Heat Gain Coefficient: Fixed glazing and framing areas shall have a solar heat gain coefficient of no greater than 0.40 as determined according to NFRC 200.
 3. Condensation Resistance: Fixed glazing and framing areas shall have an NFRC-certified condensation resistance rating of no less than 45 as determined according to NFRC 500.
- L. Noise Reduction: Test according to ASTM E 90, with ratings determined by ASTM E 1332, as follows.
 1. Outdoor-Indoor Transmission Class: Minimum 26.
- M. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
 2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
 - a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
 - b. Low Exterior Ambient-Air Temperature: 0 deg F.
 - c. Interior Ambient-Air Temperature: 75 deg F.

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. Kawneer North America; an Alcoa company Trifab VG 451T (Basis of Design)
 2. EFCO Corporation.
 3. Tubelite.
 4. Vistawall Architectural Products; The Vistawall Group; a Bluescope Steel company.

5. YKK AP America Inc.

2.3 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 1. Sheet and Plate: ASTM B 209.
 2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
 3. Extruded Structural Pipe and Tubes: ASTM B 429.
 4. Structural Profiles: ASTM B 308/B 308M.
 5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.
- B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.4 FRAMING SYSTEMS

- A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.
 1. Construction: Thermally broken for exterior applications, non-thermal for interior applications.
 2. Glazing System: Retained mechanically with gaskets on four sides.
 3. Glazing Plane: As indicated in Drawings.
- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 2. Reinforce members as required to receive fastener threads.
 3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system, fabricated from stainless steel.
- D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.
- E. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.

1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.5 GLAZING SYSTEMS

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

2.6 ENTRANCE DOOR SYSTEMS

- A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.
 1. Door Construction: 1¾ inch overall thickness, with minimum 0.188-inch thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
 2. Door Design: Wide stile; 5-inch nominal width.
 - a. Accessible Doors: Smooth surfaced for width of door in area within 10 inches above floor or ground plane.
 3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide non-removable glazing stops on outside of door.
- B. Entrance Door Hardware: Prepare for, receive and install finish hardware as specified in Division 08 Section "Finish Hardware."
- C. Weather Stripping: Manufacturer's standard replaceable components.
 1. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.
- D. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
- E. Silencers: BHMA A156.16, Grade 1.

2.7 ACCESSORY MATERIALS

- A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants."
 - 1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil thickness per coat.

2.8 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 - 4. Physical and thermal isolation of glazing from framing members.
 - 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 6. Provisions for field replacement of glazing from interior.
 - 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
 - 1. At exterior doors, provide compression weather stripping at fixed stops.
 - 2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
 - 1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
 - 2. At exterior doors, provide weather sweeps applied to door bottoms.
- G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

- A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designated aluminum finishes.
- B. Factory Finishing
 - 1. Kawneer Permanodic® AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, 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 have been corrected.

3.2 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure non-movement joints.
 - 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
 - 6. Seal joints watertight unless otherwise indicated.
- B. Metal Protection:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
- D. Set continuous sill members and flashing in full sealant bed as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

- E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.
- F. Install glazing as specified in Division 08 Section "Glazing."
- G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
 - 1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
 - 2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- H. Install perimeter joint sealants as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

3.3 ERECTION TOLERANCES

- A. Install aluminum-framed systems to comply with the following maximum erection tolerances:
 - 1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
 - 2. Alignment:
 - a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
 - b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
- B. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

3.4 ADJUSTING

- A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.
 - 1. For entrance doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch, measured to the leading door edge.

3.5 CLEANING

- A. Immediately prior to acceptance of the work, remove all protective materials and clean all exposed members.
- B. Clean with materials free of abrasives or harmful cleaning agents.

3.6 PROTECTION

- A. Protect all finished surfaces as necessary to prevent damage during progress of the work.

END OF SECTION

SECTION 084213 - SECURITY ALUMINUM ENTRANCES AND STOREFRONT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Bullet Resistant Aluminum Door Assemblies

1.2 RELATED SECTIONS

- A. Division 08 "Door Hardware"
- B. Division 08 "Glazing"
- C. Division 09 "Non-Structural Metal Framing"

1.3 ACTION SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures
- B. Product Data: For each type of door assembly, including manufacturer recommended installation instructions.
- C. Shop Drawings: Include plans, elevations, sections, details, attachment to other work and glazing details.
- D. Samples: For each exposed finish.

1.4 INFORMATION SUBMITTALS

- A. Product Test Reports: Indicating compliance with requirements
- B. Warranty: Sample of finish warranty

1.5 CLOSEOUT SUBMITTALS

- A. Refer to Section 017700 "Closeout Procedures".
- B. Maintenance data.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 Product Requirement

- B. Protect doors, frames, and accessories in accordance with AAMA CW-10 "Care and Handling of Architectural Aluminum from Shop to Site" until Substantial Completion.

1.7 WARRANTY

- A. Finish Warranty: Manufacturer's warranty against deterioration of factory finishes for the period of **10** years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

- A. Basis of Design Product: Subject to the compliance with the requirements; Provide HP500 Bullet Resistant Door System with integrated TTH600 framing system and sidelights by Insulgard Security Products; Phone 800.624.6315; or comparable product by one of the following:

- 1. US Bullet Proofing
- 2. Armotex

- B. Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with Section 002625 "Substitution Request Form"

- C. Description

- 1. Factory fabricated door assembly constructed from either 6105-T5 or 6005-T5 extruded aluminum .

- D. Dimensions: Medium Stile Door

- 1. Top Rail and Stiles: 5 inches by 3-5/8 inches
- 2. Bottom Rail: 10 inches by 3-5/8 inches
- 3. Glazing Stops: 1-1/2 inch face

2.2 PERFORMANCE CRITERIA

- A. Structural Loading

- 1. Wind Loading: As indicated on Structural Drawings
- 2. Design loads:
 - a. Positive (inward) design pressure of 45 psf
 - b. Negative (outward) design pressure of 45 psf

3. Deflection Limits

- a. Deflection of any door member in a direction normal to the plane of the wall when subjected to the indicated design loads shall not exceed $l/175$ of its clear span or $\frac{3}{4}$ inch, whichever is less.
- b. The deflection shall not exceed 50 percent of the nominal joint width at sealant joints occurring between framing members and adjacent materials, unless otherwise required by sealant manufacturer.
- c. Upon reversal of load direction at magnitudes up to and including 1.5 times design pressures, slippage at fastened and/or clamped connections shall not exceed $1/8$ inch.
- d. Glass deflection at full design load shall not exceed $1/100$ of its span, or $\frac{3}{4}$ inch, whichever is less.
- e. Metal panel deflection shall not exceed $1/90$ of its span or $\frac{3}{4}$ inch, whichever is less. The span shall be taken as the lesser of the distances between the horizontal or vertical support members.

B. Thermal Movement

1. Provide for expansion and contraction of component materials as will be caused by surface temperatures ranging from 20 degrees F to a high temperature of 180 degrees F.
2. The expansion and contraction caused by temperature differential shall not cause buckling, undue stress on glass, failure of joint seals, undue stress on structural elements, demanding loads on fasteners, reduction of performance, or other detrimental effects.

C. Ballistic Resistant: Level **3** in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing and glazing.

2.3 FABRICATION

- A. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members
- B. Door corner joinery of extruded and keyed aluminum spline with a continuous $3/8$ inch diameter steel tie rod at top and bottom rails.

2.4 FRAMING FINISH

A. Factory-applied finish:

1. Architectural Class I, clear coating AA-M10C22A41 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum" GLAZING

2.5 GLAZING

A. Glazing Material:

1. Ballistic Resistance Level 4 Insulating: SP412IG

B. Glazing gaskets:

1. Interior: Closed cell neoprene (40-50 Shore "A" Durometer)
2. Exterior: Solid neoprene (65-75 Shore "A" Durometer)

2.6 DOOR HARDWARE

A. Manufacturer Standard Door Hardware including:

B. See section 08.7100.01 Door Hardware Schedule

2.7 ACCESSORIES

A. Anchors: Fully concealed.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify field dimensions of opening prior to fabrication of door assemblies.
- B. Coordinate structural requirements to ensure proper attachment and support.

3.2 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's recommendations and approved shop drawings.
- B. Provide required support and securely fasten and set doors and frames plumb, square, and level without twist or bow.

- C. Apply sealant in accordance with door and sealant manufacturer's recommendations as indicated in installation instructions. Wipe off excess, and leave exposed sealant surfaces clean and smooth

3.3 ADJUSTING AND CLEANING

- A. Adjust door to provide for weather tightness, and leave doors clean and free of debris.

3.4 PROTECTION

- A. Protect doors and glazing from damage during construction operations. If damage occurs, remove and replace as required to provide windows in their original, undamaged condition.

END OF SECTION

SECTION 085213 ALUMINUM-CLAD WOOD WINDOWS

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. Aluminum-clad wood fixed-frame windows.
 - 2. Aluminum-clad wood awning windows.
- B. Related Sections:
 - 1. 072700 "Weather Barriers"
 - 2. 079200 "Joint Sealants"

1.3 Definitions

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.4 Performance Requirements

- A. General Performance: Aluminum-framed window system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Windows shall be Hallmark certified to a rating of FW-[AW] specifications in accordance with ANSI/AAMA/WDMA 101/I.S.2/A440-08 or ANSI/AAMA/WDMA 101/I.S.2/A440-11.
- C. Window Unit Air Leakage, ASTM E 283, 6.24 psf (50 mph): 0.05 cfm per square foot of frame or less.
- D. Window Unit Water Penetration: No water penetration through window unit when tested in accordance with ASTM E 547, under static pressure of 14.2 psf (75 mph) after 4 cycles of 5 minutes each, with water being applied at a rate of 5 gallons per hour per square foot.
- E. Forced Entry Resistance: All windows shall conform to ASTM F588, Grade 10.

1.5 Submittals

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances and installation details.
- C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- D. Samples for Verification: For aluminum windows and components required.

- E. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type, class, grade, and size of aluminum window. Test results based on use of downsized test units will not be accepted.
- G. Warranty: Submit manufacturer's standard warranty.

1.6 Quality Assurance

- A. Installer Qualifications: An installer which has had successful experiences with installation of the same or similar units required for this project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. Source Limitations: Obtain aluminum windows through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum windows and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements." Do not modify size and dimensional requirements.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. 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 mockup for type(s) of window(s) indicated, in location(s) shown on Drawings.
- F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.7 Project Conditions

- A. Field Measurements: Verify aluminum window openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.8 Warranty

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.
- B. Insulating Glass: Warranted to be free from defects (excluding breakage) for a period of five (5) years.

1.9 Delivery, Storage, and Handling

- A. Delivery: Deliver materials to site undamaged in manufacturer's or sales branch's original, unopened containers and packaging, with labels clearly identifying manufacturer and product name. Include installation instructions.

- B. Storage: Store materials in an upright position, off ground, under cover, and protected from weather, direct sunlight, and construction activities.
- A. Handling: Protect materials and finish during handling and installation to prevent damage.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. Basis-of-Design Product:
 - 1. Pella Corporation, 102 Main Street, Pella, Iowa 50219. Toll Free (800) 54-PELLA. Phone (641) 621-1000. Website www.pella.com.
- B. Subject to compliance with requirements, provide a comparable product by the following:
 - 1. Marvin
 - 2. Approved equals
- C. Substitutions: Refer to Substitutions Section for procedures and submission requirements.

2.2 Aluminum-Clad Wood Fixed-Frame Windows

- A. Aluminum-Clad Wood Fixed-Frame Windows: Pella "Clad Frame" factory-assembled, aluminum-clad wood, fixed-frame windows.
- B. Frame:
 - 1. Select woods, water-repellent, preservative-treated with EnduraGuard® in accordance with WDMA I.S.-4. EnduraGuard includes water-repellency, three active fungicides and an insecticide applied to the frame.
 - 2. Interior Exposed Surfaces: Douglas Fir with no visible fastener holes.
 - 3. Exterior Surfaces: Clad with aluminum; Custom Color to match Architect's sample.
 - 4. Assembled with screws and concealed corner locks.
 - 5. Overall Frame Depth: 5 inches (127 mm).

2.3 Aluminum-Clad Wood Awning Windows

- A. Aluminum-Clad Wood Awning Windows: Factory-assembled aluminum-clad wood windows with outward-opening sash installed in frame.
- B. Frame:
 - 1. Select woods, water-repellent, preservative-treated with EnduraGuard® in accordance with WDMA I.S.-4. EnduraGuard includes water-repellency, three active fungicides and an insecticide applied to the frame.
 - 2. Interior Exposed Surfaces: Douglas Fir.
 - 3. Exterior Surfaces: Clad with aluminum.
 - 4. Overall Frame Depth: 5 inches (127 mm).
 - 5. Factory-applied aluminum exterior trim with custom color finish to match Architect's sample.
- C. Sash:
 - 1. Select woods, water-repellent, preservative-treated with EnduraGuard in accordance with WDMA I.S.-4. EnduraGuard includes water-repellency, three active fungicides and an insecticide applied to the sash.

2. Interior Exposed Surfaces: [Clear Pine] [Mahogany] [Douglas Fir].
3. Exterior Surfaces: Clad with aluminum, lap-jointed at corners.
4. Corners: Mortised and tenoned, glued and secured with metal fasteners.
5. Sash Thickness: 1-3/4 inches (45 mm).

D. Weather Stripping:

1. Dual weather stripping.
2. Continuous, flexible, Santoprene material in dual-durometer design.
3. Units shall have welded corners, compressed between frame and sash for positive seal on all 4 sides.
4. Secondary thermoplastic vulcanizate (TPV) leaf-type weather strip between edge of sash and frame.
5. Santoprene bulb-type weather strip between edge of sash and frame on top side.

2.4 Glazing

- A. Glass and Glazing Materials: Refer to Division 08 Section "Glazing" for glass units and glazing requirements applicable to glazed aluminum window units.
- B. Type: Silicone-glazed 11/16-inch dual-seal, insulating glass.

2.5 Options

- A. Insect Screens: Standard.
 1. Compliance: ASTM D 3656 and SMA 1201.
 2. Screen Cloth: Vinyl-coated fiberglass, 18/16 mesh.
 3. Set in aluminum frame fitted to inside of window.
 4. Complete with necessary hardware.
 5. Screen Frame Finish: Baked enamel.
 - a. Color: Black.

2.6 Hardware

- A. Operator:
 1. Steel worm-gear operator with hardened gears.
 2. Operator Base: Zinc die cast with painted finish.
 3. Operator Linkage, Hinge Slide, and Hinge Arms: Stainless steel.
 4. Exposed Fasteners: Stainless steel.
 5. External Hardware Salt Spray Exposure, ASTM B 117: Exceed 1,000 hours.
 6. All hardware to comply with ANSI A117.1 and ADA.
- B. Hardware Style: Saldo
- B. Crank Handle Finish
 1. Integrated Folding Crank: Finish to be selected by Architect from Manufacturer's full range.
- C. Locking System: SureLock System.
 1. Single-handle locking system.
 2. Operate positive-acting arms that reach out and pull sash into locked position.

3. Awning Windows: One installed on sash 29 inches and smaller in frame width, 2 unison operating locks installed on sash over 29 inches in frame width.
 4. Lock Handle Finish: Finish to be selected by Architect from Manufacturer's full range.
- D. Limited Opening Device: Optional factory applied limited opening hardware available for vent units in stainless steel; nominal 3" opening.

2.7 Tolerances

- A. Windows shall accommodate the following opening tolerances:
1. Vertical Dimensions Between High and Low Points: Plus 1/4 inch, minus 0 inch.
 2. Width Dimensions: Plus 1/4 inch, minus 0 inch.
 3. Building Columns or Masonry Openings: Plus or minus 1/4 inch from plumb.

2.8 Finish

- A. Exterior Finish System: Pella EnduraClad Plus.
1. Exterior aluminum surfaces shall be finished with the following multi-stage system:
 - a. Clean and etch aluminum surface of oxides.
 - b. Pre-treat with chrome phosphate conversion coating.
 - c. Pre-treat with chromic acid sealer/rinse.
 - d. Top coat with baked-on 70% fluoropolymer-based enamel.
 2. Color: Custom color to match Architect's sample.
 3. Performance Requirements: Exterior aluminum finishes shall meet or exceed all performance requirements of AAMA 2605.
- B. Interior Finish: Factory finished stain. Color: As selected by Architect from full manufacturer's range.

2.9 Installation Accessories

- A. Flashing/Sealant Tape: Pella SmartFlash.
1. Aluminum-foil-backed butyl window and door flashing tape.
 2. Maximum Total Thickness: 0.013 inch.
 3. UV resistant.
 4. Verify sealant compatibility with sealant manufacturer.
- B. Interior Insulating-Foam Sealant: Low-expansion, low-pressure polyurethane insulating window and door foam sealant.
- C. Exterior Perimeter Sealant: "Pella Window and Door Installation Sealant" or equivalent high quality, multi-purpose sealant as specified in the joints sealant section.

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 work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall

flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight window installation.

1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76.2 mm) of opening.
3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

- A. Install windows in accordance with manufacturer's instructions and approved shop drawings.
- B. Install windows to be weather-tight and freely operating.
- C. Maintain alignment with adjacent work.
- D. Secure assembly to framed openings, plumb and square, without distortion.
- E. Integrate window system installation with exterior weather-resistant barrier using flashing/sealant tape. Apply and integrate flashing/sealant tape with weather-resistant barrier using watershed principles in accordance with window manufacturer's instructions.
- F. Place interior seal around window perimeter to maintain continuity of building thermal and air barrier using backer rod and sealant.
- G. Seal window to exterior wall cladding with sealant and related backing materials at perimeter of assembly.
- H. Leave windows closed and locked.

3.3 Adjusting, Cleaning, And Protection

- A. Adjust operating sashes, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weather tight closure. Lubricate hardware and moving parts.
- B. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- C. Clean glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- D. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

- E. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

END OF SECTION

SECTION 085653 - SECURITY WINDOWS

PART 1 - GENERAL

1.1 SECTION INCLUDED

- A. Bullet Resistant Aluminum Storefront Framing
- B. Bullet Resistant Transaction Window
- C. Impact-Resistant One-Way Observation Window

1.2 RELATED SECTIONS

- A. Division 08 "Door Hardware"
- B. Division 08 "Glazing"
- C. Division 09 "Non-Structural Metal Framing"

1.2 ACTION SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of framing and glazing including manufacturer recommended installation instructions.
- C. Shop Drawings: Include plans, elevations, sections, details, attachment to other work and glazing details for field-glazed units.
- D. Samples: For each exposed finish.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Indicating compliance with requirements
- B. Warranty: Sample of finish warranty

1.4 CLOSEOUT SUBMITTALS

- A. Refer to Section 017700 "Closeout Procedures".
- B. Maintenance data.

1.5 QUALITY ASSURANCE

- A. Mock-up: Install framing assembly at project site. Obtain Architect's approval prior to proceeding with installation of remaining storefront. Accepted mock-up may remain as portion of final work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 Product Requirements.

1.7 WARRANTY

- A. Finish Warranty: Manufacturer's warranty against deterioration of factory finishes for the period of 10 years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 BULLET RESISTANT ALUMINUM STOREFRONT FRAMING MANUFACTURED UNITS

- A. Basis of Design Product : Subject to the compliance with the requirements; Provide Insulgard TH600 Bullet Resistant Architectural Aluminum Framing by Insulgard Security Products; Phone 800.624.6315; website www.insulgard.com or comparable product by one of the following:
 - 1. US Bullet Proofing
 - 2. Armotex
- B. Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with Section 002625 "Substitution Request Form"
- C. Description
 - 1. Factory fabricated framing constructed from either 6105-T5 or 6005-T5 extruded aluminum with integral weep design to allow water to vent to the exterior along horizontal members.
 - 2. Dimensions:
 - a. Head, Jamb, Sill, Mullion and Intermediate Horizontal Members: 2-1/2 inches by 6 inches.
- D. PERFORMANCE CRITERIA
 - 1. Ballistic Resistant: Level 3 in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing, glazing and panels.

E. FABRICATION

1. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members

F. FRAMING FINISH

1. Factory-applied finish:
 - a. Architectural Class I, clear coating AA-M10C22A41 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum" GLAZING
2. Ballistic Resistant Glazing Material:
 - a. Ballistic Resistance Level 3 Insulating: SP412

G. ACCESSORIES

1. Anchors: Fully concealed in accordance with requirements of delegated design requirements

2.2 BULLET RESISTANT TRANSACTION WINDOW PRODUCTS (EQ-2)

- A. Basis of Design: SVT Bullet Resistant Transaction Window Accessories by Insulgard Security Products; Phone 800.624.6315; website www.insulgard.com

1. US Bullet Proofing
2. Armotex

B. Accessories

1. Bullet Resistant Speak Thru
 - a. 6" hole with a 10" backer plate
 - b. Ballistic Resistance Level 3
2. Deal Tray:
 - a. Recessed stainless steel with bullet-trap: The tray is constructed with 18 GA stainless steel and has a #4 brushed satin finish. All joints are welded and ground smooth. The bullet trap is constructed from a steel plate or ballistic resistant fiberglass. The trays are available with a notch on each side that allows for glazing material to be recessed in the countertop
 - b. Bullet Resistant Level 3

c. 14"x8"x1 1/2"

3. Countertop:

a. Custom Solid surface countertop to match Architect's specification and sample provided.

C. PERFORMANCE CRITERIA

1. Ballistic Resistant: Level 3 in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing, glazing, deal tray and base.

D. FABRICATION

1. Miter or cope corners the full depth of framing; assemble and dress smooth.

2. Fabricate framing from manufacturer's standard extruded aluminum in thicknesses required for security windows to comply with indicated ballistic resistance requirement.

3. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members

4. Factory glaze security windows

a. Glazing Stops: Finish stops to match security window framing

1) Secure-Side (interior) Glazing Stops: integral to framing

2) Non-secure side (exterior) Glazing Stops: Removable, coordinated with glazing indicated.

E. ALUMINUM FINISH

1. Factory-applied finish:

a. Architectural Class I, clear coating AA-M10C22A41 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum" GLAZING

F. GLAZING

1. Ballistic Resistance Level 3

2.3 IMPACT RESISTANT ONE-WAY OBSERVATION WINDOW (EQ-20)

- A. Basis of Design: Insulgard TH600 Bullet Resistant Architectural Aluminum Framing with Force Protect Sure-Gard ICGCP1516 Glass-Clad Polycarbonate by Insulgard Security Products; Phone 800.624.6315; website www.insulgard.com
 - 1. US Bullet Proofing
 - 2. Armotex
- B. PERFORMANCE CRITERIA
 - 1. Ballistic Resistant: Level 3 in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing, glazing, deal tray and base.
- C. FABRICATION
 - 1. Miter or cope corners the full depth of framing; assemble and dress smooth.
 - 2. Fabricate framing from manufacturer's standard extruded aluminum in thicknesses required for security windows to comply with indicated ballistic resistance requirement.
 - 3. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members
 - 4. Factory glaze security windows
 - a. Glazing Stops: Finish stops to match security window framing
 - 1) Secure-Side (interior) Glazing Stops: integral to framing
 - 2) Non-secure side (exterior) Glazing Stops: Removable, coordinated with glazing indicated.
- D. ALUMINUM FINISH
 - 1. Factory-applied finish:
 - a. Architectural Class I, clear coating AA-M10C22A41 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum" GLAZING
- E. GLAZING
 - 1. Ballistic Resistance Level 3
 - 2. Transparent Mirror

2.4 ACCESSORIES

- A. Fasteners: Manufacturer recommended security fasteners. Utilize fastener that require two types of tools to operate fasteners.
- B. Sealants: As indicated in Section 07 92 00 Joint Sealants.
- C. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil thickness per coat.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify field dimensions of opening prior to fabrication of windows.
- B. Coordinate structural requirements to ensure proper attachment and support.

3.2 INSTALLATION

- A. Install windows in accordance with manufacturer's recommendations and approved shop drawings.
- B. Provide required support and securely fasten and set windows plumb, square, and level without twist or bow.
- C. Apply sealant in accordance with window and sealant manufacturer's recommendations as indicated in installation instructions. Wipe off excess, and leave exposed sealant surfaces clean and smooth

3.3 PROTECTION

- A. Clean and protect windows from damage during construction operations. If damage occurs, remove and replace as required to provide windows in their original, undamaged condition.

END OF SECTION

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding doors.
 - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- D. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series.
 - 2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
 - 3. ANSI/UL 294 - Access Control System Units.
 - 4. UL 305 - Panic Hardware.
 - 5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

- A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.
- B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.2 BUTT HINGES

- A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.
5. Manufacturers:
 - a. Hager Companies (HA) - BB Series, 5-knuckle.
 - b. McKinney (MK) - TA/T4A Series, 5-knuckle.
 - c. dormakaba BEST (ST) - F/FBB Series, 5-knuckle.

2.3 CONTINUOUS HINGES

- A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 1. Manufacturers:
 - a. Hager Companies (HA).
 - b. Pemko (PE).
 - c. dormakaba BEST (ST).

2.4 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 4. Pulls, where applicable, shall be provided with a 10" clearance from the finished floor on the push side to accommodate wheelchair accessibility.
 5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
 6. Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood (RO).
 - c. Trimco (TC).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
1. Threaded mortise cylinders with rings and cams to suit hardware application.
 2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
 4. Tubular deadlocks and other auxiliary locks.
 5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 6. Keyway: Manufacturer's Standard.
- C. Large Format Interchangeable Cores: Provide removable cores (LFIC) as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
- D. Patented Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer's United States patents. Cylinders are to be factory keyed with owner having the ability for on-site original key cutting.

1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
2. Manufacturers:
 - a. Sargent (SA) - Degree DG1.
 - b. No Substitution.

E. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

F. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

G. Construction Keying: Provide temporary keyed construction cores.

H. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:
 - a. Sargent Manufacturing (SA) - 8200 Series.

2.7 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.8 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
7. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
8. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

9. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 10. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 11. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 12. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.
1. Manufacturers:
 - a. Sargent Manufacturing (SA) - 80 Series.

2.9 SURFACE DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
 4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Heavy duty surface mounted door closers shall have a 30-year warranty.
 2. Manufacturers:
 - a. Norton Rixson (NO) - 7500 Series.
 - b. Sargent Manufacturing (SA) - 351 Series.

2.10 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hiawatha, Inc. (HI).
 - c. Rockwood (RO).

2.11 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Manufacturers:
 - a. Hager Companies (HA).
 - b. Rockwood (RO).
 - c. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 1. Manufacturers:

- a. Norton Rixson (RF).
- b. Rockwood (RO).
- c. Sargent Manufacturing (SA).

2.12 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.13 ELECTRONIC ACCESSORIES

- A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
 - 1. Manufacturers:

- a. Sargent Manufacturing (SA) - 3280 Series.
- b. Security Door Controls (SD) - DPS Series.
- c. Securitron (SU) - DPS Series.

2.14 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
 1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as

intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 - 1. Quantities listed are for each pair of doors, or for each single door.
 - 2. The supplier is responsible for handing and sizing all products.
 - 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 - 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Refer to Section 080671, Door Hardware Sets, for hardware sets.

END OF SECTION 087100

SECTION 088000 - GLAZING

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. Related Sections: Section(s) related to this section include:
 - 1. Section 081113 "Hollow Metal Doors and Frames"
 - 2. Section 081416 "Flush Wood Doors"
 - 3. Section 084113 "Aluminum-Framed Entrances and Storefronts"
 - 4. Section 084213 "Security Aluminum-Framed Entrances and Storefronts"
 - 5. Section 085213 "Aluminum-Clad Wood Windows"
 - 6. Section 085653 "Security Windows"
- C. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Windows.
 - 2. Doors.
 - 3. Storefront framing.
 - 4. Glazed entrances.
 - 5. Interior borrowed lites.

1.2 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. Interspace: Space between lites of an insulating-glass unit.

1.3 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: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

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

1.4 SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Glass Samples: For each type of glass product; 12 inches square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. Qualification Data: For installers.
- E. Product Certificates: For glass and glazing products, from manufacturer.
- F. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved by coated-glass manufacturer.
- B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- C. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
- D. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.
- E. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
 2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR-A7, "Sloped Glazing Guidelines."
 3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
 4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- F. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

- G. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, whether glazing is for use in fire doors or other openings, whether or not glazing passes hose-stream test, whether or not glazing has a temperature rise rating of 450 deg F, and the fire-resistance rating in minutes.
- H. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

1.6 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 recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.7 PROJECT 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 below 40 deg F.

1.8 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 - 1. Warranty Period: Five years from date of Substantial Completion.

- C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which 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. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
 - 1. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.
- B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. 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 6.0 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.
 - 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.

2.2 GLASS PRODUCTS

- A. Provide heat-strengthened glass at locations where recommended by the glass manufacturer.
- B. Provide safety glass as specified in locations where required by Consumer Product Safety Commission "Safety Standard for Architectural Glazing Material" (16 CFR 1201.)
- C. Provide Clear Laminated Insulating Low-E-Glass "LIG" on all windows, storefronts, curtainwalls and doors on first floor up to 10' above grade.

D. TYPES

1. Clear Tempered Glass (CT):
 - a. glass; 1/4 inch thick, clear tempered glass;
 - b. Provide "Tempered Glass" by VITRO ARCHITECTURAL GLASS, Guardian; or equal products of alternatives of the quality necessary to meet the specifications
 - c. Provide where indicated on the Drawings
2. Clear Insulating Low-E Glass (CIG):
 - a. consisting of an exterior side of 1/4" clear glass and an interior side of 1/4" clear glass.
 - b. Glass shall be separated by a spacer and be hermetically sealed using double seal organic sealants.
 - c. Low E coating on #2 surface.
 - d. Unit thickness including 1/2-inch air space shall total 1 inch.
 - e. Provide reflective glazing at second surface for privacy and security.
 - f. Provide "Solarcool" + "Solorban 70 - Clear" by VITRO ARCHITECTURAL GLASS; or equal products of alternatives of the quality necessary to meet the specifications.
 - g. Color of tinted glazing panels to be selected by Architect from Manufacturer's full range of samples.
 - h. Provide at locations indicated except where safety glass is required by CPSC 16 CFR 1201;
3. Clear Insulating Tempered Low-E Glass (CIT):
 - a. exterior side of 1/4" clear tempered glass
 - b. interior side of 1/4" clear tempered glass.
 - c. Glass shall be separated by a spacer and be hermetically sealed using double seal organic sealants.
 - d. Unit thickness including 1/2-inch air space shall total 1 inch.
 - e. Low-E Coating on #2 surface.
 - f. Provide reflective glazing at second surface for privacy and security.
 - g. Provide "Solarcool" + "Solorban 70 - Clear" by VITRO ARCHITECTURAL GLASS; or equal products of alternatives of the quality necessary to meet the specifications.
 - h. Color of tinted glazing panels to be selected by Architect from Manufacturer's full range of samples.
 - i. Provide in Curtainwall and/or Storefront System where safety glass is required by CPSC 16 CFR 1201.
4. Insulating Glass Spandrel (SP):
 - a. exterior side of 1/4 inch tinted tempered glass
 - b. interior side of spandrelite glass fourth surface.
 - c. Glass separated by a spacer and hermetically sealed using double seal organic sealants.
 - d. Unit thickness including 1/2-inch air space shall total 1 inch.
 - e. "OPACI-COAT-300®" by VITRO ARCHITECTURAL GLASS, or alternatives of the quality necessary to meet the specifications.
5. Clear Glass (CG):
 - a. 1/4 inch thick ultra-clear glass, VLT: 90 percent
 - b. U-Value Winter 1.02
 - c. U-Value Summer 0.93
 - d. SHGC .90
 - e. Shading Coefficient 1.03
 - f. Visible Light reflectance 8 percent.

- g. Provide "Starphire" by VITRO ARCHITECTURAL GLASS; or equal products of alternatives of the quality necessary to meet the specifications
- 6. Laminated Insulated Glass (LIG):
 - a. Double-Glazed Sputter-Coated Insulating Glass Units
 - b. Laminated Outboard Lite, 1/4 inch thick Outboard Lite Guardian UltraClear® float glass
 - c. Heat Treatment: Heat-strengthened, ASTM C 1048, Kind HS
 - d. Interlayer: Polyvinyl butyral (PVB) plastic interlayer, clear 0.060 inch thick.
 - e. Coating on Surface No. 4: SunGuard SN 68
 - f. Glass shall be separated by a spacer and be hermetically sealed using double seal organic sealants
 - g. Inboard Lite: UltraClear® Float Glass: ASTM C 1036, Type 1, Class 1, Quality q3.
 - h. Provide Solar control insulating Laminated Coated Glass as manufactured by Guardian Glass; or equal products of alternatives of the quality necessary to meet the specifications

2.3 BULLET RESISTANT GLAZING (BRG)

A. Performance Requirements

- 1. Ballistics-Resistance Performance: Provide units identical to those tested for compliance with the following requirements:
 - a. Listed and labeled as bullet resisting according to UL 752.
 - b. Tested for ballistics resistance according to UL 752, ASTM F1233, HPW-TP-0500.03, or NIJ STD-0108.01, by a testing agency acceptable to authorities having jurisdiction.
 - c. Certified as complying with SD-STD-01.01, by US State Department, for ballistics resistance when tested by a qualified testing agency.
- 2. Forced-Entry-Resistance Performance: Provide units identical to those tested for compliance with requirements indicated, and as follows:
 - a. Tested for forced entry resistance according to HPW-TP-0500.03 or ASTM F 1233 by a testing agency acceptable to authorities having jurisdiction.
 - b. For Federal Government Work: Certified as complying with SD-STD-01.01 by US State Department, for forced entry resistance when tested by a qualified testing agency.
- 3. Air Infiltration for Fixed Windows: Not more than 0.010 cfm/ft. (0.015 L/s per m) of crack length at an inward test pressure of 1.56 lbf/sq. ft. (75 Pa) when tested according to ASTM E283.
- 4. Air Infiltration for Fixed Windows: Not more than 0.060 cfm/ft. (0.093 L/s per m) of crack length at an inward test pressure of 1.56 lbf/sq. ft. (75 Pa) when tested according to ASTM E283.
- 5. Water Penetration: No water penetration as defined in test method at an inward test pressure of 1.56 lbf/sq. ft. (75 Pa) when tested according to ASTM E331.
- 6. Water Penetration: No water penetration as defined in test method at an inward test pressure of 2.86 lbf/sq. ft. (137 Pa) when tested according to ASTM E331.
- 7. Water Penetration: No water penetration as defined in test method at an inward test pressure of 6.24 lbf/sq. ft. (300 Pa) when tested according to ASTM E331

B. Basis of Design: BulletBlock SP1.25 as manufactured by InsulGard Security Products.

- 1. Performance Requirements:
 - a. Ballistic Level (UL 752): Level 3.
 - b. Provide Polycast SAR Super Abrasion Resistant Coating

2.4 SECURITY GLAZING

- A. Polycarbonate Sheet: ASTM C 1349, Appendix X1, Type II, coated, mar-resistant, UV-stabilized polycarbonate with coating on exposed surfaces and Type I, standard, UV-stabilized polycarbonate where no surfaces are exposed.
- B. Laminated Polycarbonate: Polycarbonate sheets laminated with clear urethane interlayer that complies with ASTM C 1349, Appendix X2, and has a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation. Provide laminated units that comply with requirements of ASTM C 1349 for maximum allowable laminating process blemishes and haze.
- C. Glass-Clad Polycarbonate: ASTM C 1349, and other requirements specified.
 - 1. Provide glass-clad polycarbonate that complies with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified.
 - 2. Forced Entry Resistance: H.P. White TP-0500.01 Level 1, or ASTM F1915 Grade 4.
 - 3. Overall Nominal Thickness: 9/16 inch.
 - 4. Color: Clear.
 - 5. Available Products:
 - a. Force Protect Sure-Gard ICGCP1516 by Insulgard.
 - b. Secure-Tem + Poly 2117 by Global Security Glazing.
 - c. ICGCP 916 CS by Standard Bent Glass.
 - d. 9/16" ArmorProtectPlus by Oldcastle Glass.
 - e. D-FenceGlas DFG 9/16 by North American Specialty Glass.
 - f. DGCP562 by Dlubak Corp.

2.5 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
 - 1. Neoprene complying with ASTM C 864.
 - 2. EPDM complying with ASTM C 864.
 - 3. Silicone complying with ASTM C 1115.
 - 4. Thermoplastic polyolefin rubber complying with ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned neoprene, EPDM, silicone, or thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
- C. Lock-Strip Gaskets: Neoprene extrusions in size and shape indicated, fabricated into frames with molded corner units and zipper lock-strips, complying with ASTM C 542, black.
- D. Neoprene Glazing Gaskets for bullet resistant glazing:
 - 1. Interior Glazing gaskets closed cell cellular neoprene conforming to ASTM C509 Type II Option 1 with a 40-50 Shore A Durometer.
 - 2. Exterior Glazing gaskets solid neoprene conforming to ASTM C864 with a 65-75 Shore A Durometer.

2.6 GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will 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 100/50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 790.
 - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
 - c. Tremco Incorporated; Spectrem 1.
- C. Glazing Sealants for Fire-Rated Glazing Products: Products that are approved by testing agencies that listed and labeled fire-resistant glazing products with which they are used for applications and fire-protection ratings indicated.
- D. Glazing Sealants for bullet resistant glazing:
1. Dow 995 or Dow 795 for exterior applications.
 2. Dow 995, Dow 795, or 3M IPA for interior applications.

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; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, 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.
- 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.
- G. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

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.
- 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.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

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. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. 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.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. 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.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- K. 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.

- L. 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.

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 and then to jambs. Cover horizontal framing joints by applying tapes to jambs and 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.
- 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. Fabricate 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.

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 APPLIED GLAZING FILM

- A. Apply glazing film at locations indicated, according to manufacturer's written instructions.

3.8 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. 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; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- E. Wash glass on both exposed surfaces in each area of Project 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.

END OF SECTION

SECTION 089000 - ARCHITECTURAL LOUVERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Extruded aluminum inverted chevron stationary louver with drainable blades.
- B. Blank-off panels for louvers

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-In-Place Concrete.
- B. Section 04 20 00 - Masonry Units.
- C. Section 05 12 00 - Structural Steel Framing.
- D. Section 06 10 53 – Miscellaneous Rough Carpentry.
- E. Section 07 42 00 – Architectural Metal Wall Panels.
- F. Section 07 62 00 – Sheet Flashing and Trim.
- G. Section 07 92 00 - Joint Sealants.
- H. Section 09 22 16 – Non-Structural Metal Framing
- I. Section 09 91 00 - Painting.
- J. Section 23 00 00 - Heating, Ventilation, and Air Conditioning

1.3 REFERENCES

- A. AAMA 2604 – High Performance Organic Coatings on Architectural Extrusions and Panels.
- B. AAMA 2605 - High Performance Organic Coatings on Architectural Extrusions and Panels.
- C. AAMA 611 – Voluntary Specification for Anodized Architectural Aluminum.
- D. AMCA 500 - Test Methods for Louvers, Dampers and Shutters.
- E. AMCA 511 - Certified Ratings Program for Air Control Devices..
- F. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- G. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

- H. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- I. ASTM D822 - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings
- J. ASTM D2244 - Standard Test Method for Calculation of Color Differences From Instrumentally Measured Color Coordinates.
- K. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

1.4 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Horizontal Louver: Louver with horizontal blades; i.e., the axes of the blades are horizontal.
- C. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.
- D. Rain-Resistant Louver: Louver that provides specified wind-driven rain performance, as determined by testing according to AMCA 500-L.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
- B. Sustainable Design Submittals:
 - 1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
 - 2. Environmental Product Declaration (EPD): For each product.
 - 3. Environmental Product Declaration: For each product.
 - 4. Health Product Declaration: For each product.
 - 5. Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.
- C. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
 - 1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
 - 2. Show mullion profiles and locations.
- D. Delegated-Design Submittal: For louvers indicated to comply with structural and seismic performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and Installer.
- B. Product Test Reports: For each type of louver, for tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For manufacturer's warranties.
- E. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- F. Recycled Content of Aluminum Components: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- G. Regional Materials: Manufacture products within 100 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of Project site.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. The manufacturer shall have implemented the management of quality objectives, continual improvement, and monitoring of customer satisfaction to assure that customer needs and expectations are met.
 - 2. Manufacturer shall be International Organization for Standardization (ISO) 9001 accredited.
- B. Product Qualifications:
 - 1. Louvers licensed to bear AMCA Certified Ratings Seal. Ratings based on tests and procedures performed in accordance with AMCA 511 and comply with AMCA Certified Ratings Program. AMCA Certified Ratings Seal applies to air performance and water penetration ratings.
 - 2. Louvers shall be factory engineered to withstand the specified seismic loads.
 - a. Minimum design loads shall be calculated to comply with ASCE – 7, or local requirements of Authority Having Jurisdiction (AHJ).

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store materials in a dry area indoors, protected from damage and in accordance with manufacturer's instructions.
- C. Handling: Protect materials and finishes during handling and installation to prevent damage.

- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.9 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 WARRANTY

- A. Manufacturer shall provide standard limited warranty for louver systems for a period of five years (60 months) from date of installation, no more than 60 months after shipment from manufacturing plant. When notified in writing from the Owner of a manufacturing defect, manufacturer shall promptly correct deficiencies without cost to the Owner.
- B. Manufacturer shall provide 20-year limited warranty for fluoropolymer-based finish on extruded aluminum substrates.
Finish coating shall not peel, blister, chip, crack or check.
Chalking, fading or erosion of finish when measured by the following tests:
 - a. Finish coating shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D4214.
 - b. Finish coating shall not change color or fade in excess of 5 NBS units as determined by ASTM D2244 and ASTM D822.
 - c. Finish coating shall not erode at a rate in excess of 10%/ 5 year as determined by Florida test sample.
- C. Manufacturer shall provide a 5-year limited warranty for Class I and a 3-year limited warranty for Class II anodized finish on extruded aluminum substrates.
 - 1. Seller warrants the Finish under normal atmospheric conditions.
 - a. Will not crack, craze, flake or blister
 - b. Will not change or fade more than (5) Delta-E Hunter units as determined by ASTM method D-2244
 - c. Will not chalk in excess of ASTM D-4214-07 number (8) rating, determined by the procedure outlined in ASTM D-4214-07 specification test.
 - 2. Any forming or welding must be done prior to finishing. Post forming or welding will void the warranty.
 - 3. This Warranty applies only if the anodized aluminum product is installed in strict accordance with Seller's recommended practices and maintained in accordance with AAMA (American Architectural Manufacturers Association) publication number 609 and 610-09 ("Cleaning and Maintenance Guide for Architecturally Finished Aluminum").

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers standard drainable sight proof louvers, as manufactured by; Ruskin or alternatives of the quality necessary to meet the specifications.

- B. Available Manufacturers: Subject to compliance with requirements, provide the named product or comparable product by one of the following:
1. Airolite Company, LLC (The).
 2. Greenheck Fan Corporation.
 3. Pottorff.
 4. Ruskin Company.
- C. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 – Product Substitution Procedures.

2.2 STATIONARY BLADE LOUVER

- A. Fabrication:
1. Design: Stationary inverted chevron blade louver with mechanical fastened construction. Hidden vertical supports to allow limited continuous line appearance.
 2. Frame:
 - a. Frame Depth: 4 inches as indicated on drawings.
 - b. Frame Depth: 6 inches as indicated on drawings
 - c. Wall Thickness: 0.081 inch (2.1 mm), nominal.
 - d. Material: Extruded aluminum, Alloy 6063-T6.
 3. Blades:
 - a. Style: Inverted Chevron 45 degrees spaced at 1 7/16 inches (36.5 mm)
 - b. Wall Thickness: 0.081 inch (2.1 mm), nominal.
 - c. Material: Extruded aluminum, Alloy 6063-T6.
 4. Minimum Assembly Size: 12 inches wide by 12 inches high (305 mm x 305 mm).
 5. Maximum Factory Assembly Size: Single sections shall not exceed 72 inches wide by 144 inches high (1829 mm x 3658 mm) . Louvers larger than the maximum single size shall be constructed of smaller sections.
- B. Performance Data:
1. Performance Ratings: AMCA licensed.
 - a. Based on testing 48 inch by 48 inch (1219 mm by 1219 mm) size unit in accordance with AMCA 500.
 2. Free Area: 45 percent, nominal.
 3. Free Area Size: 7.29 sf (.68 sm).
 4. Maximum Recommended Air Flow through Free Area: 2024 feet per minute (7.2 m/s).
 5. Air Flow: 14755 cubic feet per minute (418 cu. m/min).
 6. Maximum Pressure Drop: .42 inches w.g. (.05 kPa).
- C. Wind Driven Water Penetration Performance:
1. Based on testing 39 inches x 39 inches (1 m x 1 m) core area, 41 inches x 44 inches (1.04 m x 1.12 m) nominal size unit in accordance with AMCA 500-L.
 2. Wind Velocity: 29 mph (47 kph).
 - a. Rainfall Rate: 3 inches/hour (76 mm/hour).
 - b. Free Area Velocity: 2010 feet per minute (10.0 m/sec).
 - c. Water Resistance Effectiveness: 100% (AMCA Class A).
 3. Wind Velocity: 50 mph (80 kph).

- a. Rainfall Rate: 8 inches/hour (203 mm/hour).
 - b. Free Area Velocity: 2024 feet per minute (10.1 m/sec).
 - c. Water Resistance Effectiveness: 100% (AMCA Class A).
- A. Design Windload: Per Code.
- B. Design Windload: Incorporate structural supports required to withstand wind load of _20 pounds per square foot.
- C. Louvers shall be factory engineered to withstand the specified seismic loads.
1. Minimum design loads shall be calculated to comply with ASCE – 7, or local requirements of Authority Having Jurisdiction (AHJ).

2.3 ACCESSORIES

- A. Insulated Blank-Off Panels: Laminated panels consisting of an insulating core surfaced on back and front with metal sheets and attached to back of louver.
1. Thickness: 2 inches .
 2. Metal Facing Sheets: Aluminum sheet, not less than 0.032-inch nominal thickness.
 3. Insulating Core: Rigid, glass-fiber-board insulation or extruded-polystyrene foam .
 4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded-aluminum-channel frames, not less than 0.080-inch nominal thickness, with corners mitered and with same finish as panels.
 5. Seal perimeter joints between panel faces and louver frames with gaskets or sealant.
 6. Panel Finish: Same finish applied to louvers .
 7. Attach blank-off panels with sheet metal screws .
 8. Provide at locations open to mechanical rooms
- B. Bird Screen:
1. Aluminum: Aluminum, 1/2 inches by 0.063 inch (13 mm by 1.6 mm), expanded and flattened.
 2. Frame: Removable.
- C. Insect Screens:
1. Aluminum: 18-16 mesh, mill finish, .011 inch (0.3 mm) wire.
 2. Frame: Aluminum.
- D. Extended Sills:
1. Extruded aluminum, Alloy 6063-T6. Minimum nominal thickness 0.060 inch (1.5 mm).
- E. Visible Mullions: Manufacturer's standard horizontal or vertical visible mullions for architectural accent as indicated on drawings.

2.4 FINISHES

- A. Finish: 50 percent PVDF: Finish shall be applied at 1.2 mil total dry film thickness.
1. Coating shall conform to AAMA 2604, sections 4.2 and 4.3. Apply coating following cleaning and pretreatment. Cleaning: AA-C12C42R1X.
 - a. Baked Enamel (50% PVDF).

- b. Pearledize 50 (2-coat mica).
 - 2. 20-year finish warranty.
- B. Finish: Prime Coat:
 - 1. Apply alkyd prime coat following chemical cleaning and pretreatment.
 - 2. Primer preparation for field painting.
- C. Color: Custom color to be selected by Architect from manufacturers full selection.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect areas to receive louvers. Notify the Architect of conditions that would adversely affect the installation or subsequent utilization of the louvers. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. If opening preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean opening thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install louvers at locations indicated on the drawings and in accordance with manufacturer's instructions.
- B. Install louvers plumb, level, in plane of wall, and in alignment with adjacent work.
- C. The supporting structure shall be designed to accommodate the point loads transferred by the louvers when subject to the design wind loads.
- D. Install joint sealants as specified in Section 07 92 00.

3.4 CLEANING

- A. Clean louver surfaces in accordance with manufacturer's instructions.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 08.9000

SECTION 0092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes non-load-bearing steel framing members for the following applications:

1. Interior framing systems (e.g., supports for partition walls, framed soffits, furring, etc.).
2. Interior suspension systems (e.g., supports for ceilings, suspended soffits, etc.).

B. Related Sections

1. Division 09 "Gypsum Board"
2. Division 06 "Sheathing"

1.2 SUBMITTALS

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

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized, unless otherwise indicated.

2.2 FRAMING SYSTEMS

A. Steel Studs and Runners: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.0179 inch (0.45 mm) unless indicated otherwise.

2. Minimum Base-Metal Thickness: 0.0312 inch (0.79 mm) wherever gypsum board or cementitious backer boards (CBB) are scheduled and at low-height partitions.
 3. Depth: 3-5/8 inches (92.1 mm) unless indicated otherwise on Drawings.
- B. Slip-Type Head Joints: Where indicated, provide one of the following:
1. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- (50.8-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
 2. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - i. Steel Network Inc. (The); VertiClip SLD Series.
 - ii. Superior Metal Trim; Superior Flex Track System (SFT).
- C. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
1. Minimum Base-Metal Thickness: 0.0312 inch (0.79 mm).
- D. Cold-Rolled Channel Bridging: 0.0538-inch (1.37-mm) bare-steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flanges.
1. Depth: 1-1/2 inches (38.1 mm).
 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38.1 by 38.1 mm), 0.068-inch- (1.73-mm-) thick, galvanized steel.
- E. RC Resilient Channel: RC Deluxe Resilient Channel by Clark Dietrich, or equal.
1. 22 mil steel, Grade 33ksi minimum yield strength
 2. Coating: G40EQ
 3. Meet or exceed ASTM C645 and ASTM A 1003.
 4. Dimensions: 2-5/8 inches by 1/2-inch.
- F. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8-inch, minimum uncoated-metal thickness of 0.0179 inch, and depth required to fit insulation thickness as indicated on Drawings.
- G. Hat Channel: Rigid hat-shaped furring channels; ASTM C645, 7/8" deep, minimum base-metal thickness: 0.0296 inch.
- H. Sound Isolation Clips: Basis of Design IsoMax as manufactured by Kinetics Noise Control.
1. Provide furring channel widths from 2.38 inches to 2.75 inches.
 2. Dimensions: 1-inch wide by 3.86-inches wide.
 3. Location: Provide in mechanical rooms B-119, B133, B-211, B225, B-311, B-325 on wall separating mechanical room and classroom and as indicated on Drawings.

2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A641/A Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
- B. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.
- C. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch (1.367 mm) and minimum 1/2-inch- (13-mm-) wide flanges.
 - 1. Depth: 2-1/2 inches.
- D. Furring Channels (Furring Members):
 - 1. Cold-Rolled Channels: 0.0538-inch (1.367-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.
 - 2. Steel Studs and Tracks: ASTM C645.
 - a. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm).
 - b. Depth: As indicated on Drawings.
 - 3. Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch (22 mm) deep.
 - a. Minimum Base-Steel Thickness: 0.0296 inch (0.752 mm).
- E. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong World Industries, Inc: Drywall Grid Systems.
 - b. Chicago Metallic Corporation: 650/670 Fire Rated Drywall Ceiling Suspension.
 - c. United States Gypsum Company: Drywall Suspension System.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
 - 1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
 - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.

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

3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
 1. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
 2. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- B. Install studs so flanges within framing system point in same direction.
 1. Space studs as follows:
 - a. Single-Layer Application: 16 inches (406 mm) o.c., unless otherwise indicated.
 - b. Multilayer Application: 16 inches (406 mm) o.c., unless otherwise indicated.
 - c. Tile backing panels: 16 inches (406 mm) o.c., unless otherwise indicated.
- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

- a. Install two studs at each jamb, unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (12.7-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
 6. Curved Partitions:
 - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
 - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches (150 mm) o.c.
- D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

END OF SECTION

SECTION 09.2900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Standard Gypsum Boar
2. Abused Resistant Gypsum Board
3. Fire-Resistance Rated Gypsum Board
4. Mold and Moisture Resistant Gypsum Board
5. Cement Board
6. Ceiling Board

B. Related Sections include the following:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood framing and furring.
2. Division 07 Section "Thermal Insulation" for building insulation.
3. Division 09 Section "Non-Structural Metal Framing" for metal studs, isolation clips, etc.

1.2 DEFINITIONS

A. Gypsum Board Terminology: Refer to ASTM C 11 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.3 SUBMITTALS

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

B. Shop Drawings: Show locations, fabrication, and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other units of Work.

C. Samples: For the following products:

1. Trim Accessories: Full-size sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance-Rated Assemblies: Indicated by design designations from UL's "Fire Resistance Directory."

B. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1. STC-Rated Assemblies: Indicated by design designations from GA-600, "Fire Resistance Design Manual."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

PART 2 – PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Gypsum Board and Related Products:
 - a.Certainteed Corp.
 - b.G-P Gypsum Corp.
 - c.National Gypsum Company.
 - d.United States Gypsum Co.

2.3 STANDARD GYPSUM BOARD

- A. Basis of Design: Gold Bond® BRAND Gypsum Board

1. Panel Physical Characteristics
 - a. Core: Regular gypsum core
 - b. Surface Paper: 100 percent recycled content paper on front, back and long edges
 - c. Long Edges: Tapered
 - d. Overall thickness: 5/8 inch
 - e. Panel complies with requirements of ASTM C 1396
2. Location: Typical wall construction (unless noted otherwise). See drawings.

2.4 FIRE-RESISTANCE RATED GYPSUM BOARD

- A. Basis of Design: Gold Bond® BRAND Fire-Shield C™ Gypsum Board
 1. Type C, Panel Physical Characteristics
 - a. Core: Enhanced fire-resistance rated (Type C) gypsum core
 - b. Surface paper: 100 percent recycled content paper on front, back and long edges
 - c. Long Edges: Tapered
 - d. Overall thickness: 5/8 inch
 - e. Panel complies with Type X requirements of ASTM C 1396
 2. Location: All fire-rated walls. See drawings.

2.5 MOLD AND MOISTURE RESISTANT GYPSUM BOARD

- A. Basis of Design: Gold Bond® BRAND XP Gypsum Board
 1. Panel Physical Characteristics
 - a. Core: Mold and moisture resistant gypsum core
 - b. Surface paper: 100 percent recycled content moisture/mold/mildew resistant paper on front, back, and long edges
 - c. Long Edges: Tapered
 - d. Overall thickness: 5/8 inch
 - e. Panel complies with requirements of ASTM C 1396
 - f. Mold/Mildew Resistance: 10 when tested in accordance with ASTM D 3273
 2. Location: All restroom, shower, locker room locations. See drawings.

2.6 ABUSE RESISTANT GYPSUM BOARD

- A. Basis of Design: Gold Bond BRAND Hi-Abuse® XP® Gypsum Board
- B. Performance Criteria - Wall Assembly STC: 52

1. Panel Physical Characteristics

- a. Core: Fire-resistance rated gypsum core, with additives to enhance surface indentation resistance and impact resistance
- b. Surface paper: Abrasion resistant, 100 percent recycled content moisture/mold/mildew resistant paper on front, back and long edges
- c. Long Edges: Tapered
- d. Overall thickness: 5/8 inch
- e. Panel complies with Type X requirements of ASTM C 1396
- f. Surface Abrasion Resistance: Classification Level 3 in accordance with ASTM C 1629
- g. Indentation Resistance: Classification Level 1 in accordance with ASTM C 1629.
- h. Soft Body Impact Resistance: Classification Level 2 in accordance with ASTM C 1629
- i. Hard Body Impact Resistance: Classification Level 1 in accordance with ASTM C 1629.

Location: All corridors and vestibules. See drawings.

2.7 CEMENT BOARD

A. Cement Backerboard Basis of Design: PermaBase® BRAND Cement Board

1. Panel Physical Characteristics

- a. Core: Cementitious, water-durable
- b. Surface: Fiberglass mesh on front and back
- c. Long Edges: Tapered
- d. Overall Thickness: 5/8 inch
- e. Panel complies with requirements of ASTM C 1325 and ANSI A 118.9
- f. Density: 72 lbs. per cu. ft.
- g. Water Absorption: Not greater than 8 percent when tested for 24 hours in accordance with ASTM C 473

Location: Partition types with tile. See drawings.

2.8 ACCESSORY PRODUCTS

A. Acoustical sealant

- 1. Conform to ASTM C 919
- 2. VOC content less than 2 g/L
- 3. Products/Manufacturer
 - a. Grabber Acoustical Sealant GSC

- b. STI SpecSeal Smoke N Sound Caulk
- c. BOSS 824 Acoustical Sound Sealant

B. Firestopping

- 1. Conform to ASTM E 90
- 2. Products/Manufacturer
 - a. STI SpecSeal SSP Putty Pads
 - b. BOSS 818 Fire Rated Putty Pads

C. Fasteners for use with cement board

- 1. PermaBase Cement Board drill point screws (No. 8)
 - a. Wafer head, corrosion-resistant
 - b. Overall Thickness: 1-5/8 inch
 - c. For use with 20 to 14 ga. Steel framing and complying with ASTM C 1002

D. Joint Treatment

- 1. Tape:
 - a. Paper Tape: 2-1/16 inches wide
 - b. Paper Tape: 2 inches wide with metal strips laminated along the center crease to form inside and outside corners
 - c. Fiberglass Tape: Nominal 2 inches wide self-adhering tape

E. Joint Sealant

- 1. Conform to ASTM C 920
- 2. VOC content less than 2 g/L

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Ceilings: Coordinate installation of ceiling suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers at spacing required to support ceilings and that hangers will develop their full strength.

- 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

B. Coordination with Sprayed Fire-Resistive Materials:

1. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of gypsum board assemblies and without reducing the fire-resistive material thickness below that which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

3.3 APPLYING AND FINISHING PANELS, GENERAL

A. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.

B. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.

C. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

F. Attach gypsum panels to framing provided at openings and cutouts.

G. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members using resilient channels, or provide control joints to counteract wood shrinkage.

H. Form control and expansion joints with space between edges of adjoining gypsum panels.

I. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim edges with U-bead edge trim Where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

J. Floating Construction: Where feasible, including where recommended in writing by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.

K. STC-Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

L. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.

1. Space screws a maximum of 12 inches (304.8 mm) o.c. for vertical applications.

M. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2 mm) o.c.

3.4 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Regular Type: Vertical surfaces, unless otherwise indicated.
2. Type X: Where required for fire-resistance-rated assembly.
3. Flexible Type: Apply in double layer at curved assemblies.
4. Ceiling Type: Ceiling surfaces.

3.5 PANEL APPLICATION METHODS

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
 - b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

B. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.6 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

- B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

3.7 FINISHING GYPSUM BOARD ASSEMBLIES

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1 for ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistive-rated assemblies and sound-rated assemblies.

a. Where level 1 gypsum board finish is indicated, apply joint compound specified for embedding coat.

2. Level 4 for all exposed gypsum board surfaces.

a. For level 4 gypsum board finish, embed tape in finishing compound plus two separate coats applied over joints, angles, fastener heads, and trim accessories.

b. Primer and its application to surfaces are specified in other Division 09 Sections.

3.8 FIELD QUALITY CONTROL

A. Above-Ceiling Observation: Architect will conduct an above-ceiling observation before installing gypsum board ceilings and report deficiencies in the Work observed. Do not proceed with installation of gypsum board to ceiling support framing until deficiencies have been corrected.

1. Notify Architect seven days in advance of date and time when Project, or part of Project, will be ready for above-ceiling observation.

2. Before notifying Architect, complete the following in areas to receive gypsum board ceilings:

a. Installation of 80 percent of lighting fixtures, powered for operation.

b. Installation, insulation, and leak and pressure testing of water piping systems.

c. Installation of air-duct systems.

d. Installation of air devices.

e. Installation of mechanical system control-air tubing.

f. Installation of ceiling support framing.

END OF SECTION 09.2900

SECTION 09.3000 – TILING

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. Porcelain tile
- 2. Glazed wall tile
- 3. Marble thresholds
- 4. Tile backing panels
- 5. Waterproof membrane.
- 6. Cleavage membrane.
- 7. Crack isolation membrane.
- 8. Metal edge strips.

- B. Related Sections:

- 1. Division 07 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
- 2. Division 09 Section "Gypsum Board" for cementitious backer units and glass-mat, water-resistant backer board.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. Face Size: Actual tile size, excluding spacer lugs.
- C. Module Size: Actual tile size plus joint width indicated.

1.4 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:

1.5 SUBMITTALS

- A. Product Data: For each type of product
- C. Samples:
 - 1. Each type and composition of tile and for each color and finish required. [For ceramic mosaic tile in color blend patterns, provide samples of each color blend.]
 - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.
 - 3. Marble thresholds

1.6 QUALITY ASSURANCE

- A. Tile Council of America, Inc., "Handbook for Ceramic Tile Installation," latest edition;
- B. American National Standards Institute (ANSI) "American National Standard Specifications for Ceramic Tile - ANSI-137.1."
- C. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- D. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- E. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 - 1. Marble thresholds.
 - 2. Waterproof membrane.
 - 3. Crack isolation membrane.
 - 4. Joint sealants.
 - 5. Cementitious backer units.
 - 6. Metal edge strips.
- F. Pre-installation Conference: Conduct conference at Project site.
 - 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.9 EXTRA MATERIALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- B. Tile and Trim Units: Furnish quantity of full-size units equal to 5 percent of amount installed for each type, composition, color, pattern, and size indicated but no less than one carton of each type and color. Box for storage, date, and mark the box "maintenance tile".
- C. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

- E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by pre-coating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

- A. Basis of design manufacture: Daltile Corporation
- B. Accepted alternate manufactures include Crossville, Interceramic, and American Olean.
- C. Floor tile (indicated on the Drawings, FINISH LEGEND & SCHEDULE).
- D. Wall tile (indicated on Drawings, FINISH LEGEND & SCHEDULE).
- E. Wall base (indicated on Drawings, FINISH LEGEND & SCHEDULE).

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 - 1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
 - 1. Description: Provide the following or approved equal:
 - a. Vermont Marble Company "Imperial Danby".

2.4 WATERPROOF MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 40 mil nominal thickness.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Noble Company (The); Nobleseal "Chloraloy 240"

2.5 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.12 for heavy duty performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 30 mil nominal thickness.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Noble Company (The); Nobleseal CIS.

2.6 CLEAVAGE MEMBRANE

- A. Cleavage Membrane: 15-pound roofing felt ASTM D 226, for use under full set tile locations on slab on grade, unless other material is indicated on the Drawings or specified.

2.7 SETTING MATERIALS

- A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.
 - 1. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils (0.1 mm) thick.
 - 2. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches (50.8 by 50.8 mm) by 0.062-inch (1.57-mm) diameter; comply with ASTM A 185 and ASTM A 82 except for minimum wire size.
 - 3. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C 847.
 - a. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.
 - b. Base Metal and Finish for Exterior Applications: Zinc-coated (galvanized) steel sheet.
 - c. Configuration over Studs and Furring: Flat.
 - d. Configuration over Solid Surfaces: Self furring.
 - e. Weight: 2.5 lb/sq. yd.
 - 4. Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.
- B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
 - 1. 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:
 - a. Bonsal American; an Oldcastle company.
 - b. Bostik, Inc.
 - c. Laticrete International, Inc.
 - d. MAPEI Corporation.

2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. Provide prepackaged, dry-mortar mix combined with [liquid-latex additive at Project site.
4. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.8 GROUT MATERIALS

A. Polymer-Modified Tile Grout: ANSI A118.7.

1. Basis-of-Design Product: Subject to compliance with requirements, provide "Classic Collection" and "Designer Series" as manufactured by MAPEI Corporation or comparable product by one of the following:
 - a. Bonsal American; an Oldcastle company.
 - b. Laticrete International, Inc.
 - c. Southern Grouts & Mortars, Inc.
 - d. Summitville Tiles, Inc.
2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

2.9 ELASTOMERIC SEALANTS

- A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."
 1. Use sealants that have a VOC content of [250] <Insert limit> g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 2. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.
- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.
- C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.
 1. Products: Subject to compliance with requirements, provide the following or approved equal:
 - a. Dow Corning Corporation; Dow Corning 786TR-WHT.

2.10 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

- B. Metal Edge Divider Strip: Types as indicated on Drawings as manufactured by Schluter Systems L.P., Plattsburgh, NY; or alternatives of the quality necessary to meet the specifications.
- C. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.11 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.

4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not, factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments. Use bullnosed shapes to terminate tile except at inside corners.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 2. Align joints where adjoining tiles on floor, base, walls, and trim are the same size.

3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- E. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 1. Porcelain Tile: 3/16 inch.
 2. Glazed Wall Tile: 1/16 inch.
 3. Decorative Thin Wall Tile: 1/16 inch.
- F. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- G. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated on Drawings and as follows. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 1. Where tile floors abut vertical surfaces such as bases, walls, curbs, etc., provide 1/4-inch-wide control joints, full depth through the ceramic tile and under bed, to receive control joint sealant.
 2. At building control points, between ceramic tile and metal door frames and between ceramic tile and marble thresholds.
 3. Control joints shall also be located directly over joints in concrete slabs. Joints shall be in accordance with the "Handbook for Ceramic Tile Installation" of the Tile Council of America, EJ171-06. Base/cove installation shall be "Flush" as indicated in the "Handbook for Ceramic tile Installation."
 4. All control joints shall be left open, protected and maintained clean to receive the control joint sealant and backing.
 5. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- H. Marble Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
 1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).
 2. Do not extend cleavage membrane waterproofing or crack isolation membrane under thresholds set in dry-set or latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane waterproofing or crack isolation membrane with elastomeric sealant.
- I. Metal Edge Strips: Install [at locations indicated and where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

3.4 WATERPROOFING INSTALLATION

- A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

- B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 CRACK ISOLATION MEMBRANE INSTALLATION

- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.6 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Clean grout smears and hazes from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.7 TILE INSTALLATION SCHEDULE

- A. Ceramic tile installation shall be in accordance with the following methods from the "Handbook For Ceramic Tile Installation," of the Tile Council of America, Inc., Latest Edition:
 - 1. Thin-set floor: F113 with wet-cured, Latex-Portland cement/sand grout (1 pc = 1 sand) with crack protection sheet;
 - 2. Thin-set with waterproofing membrane: F111, provide at second and third floor toilet rooms.
 - 3. Thin-set, wall: W243.
 - 4. Threshold: TH611.
- B. All work shall be laid out to minimize cutting. Where cutting is required, tile shall be neatly cut and fitted with edges ground smooth.

- C. Reinforce setting beds over waterproofing and cleavage membranes with the specified mesh reinforcing. Do not install tile floors over membrane until the membrane has been tested and accepted.
- D. Apply silicone sealant at top edge of ceramic and quarry base between wall surface and base.
- E. Use a grout release coating product as approved by the tile manufacture.
- F. Limits of tile:
 - 1. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruption.
 - 2. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.
 - 3. Use bullnose shapes to terminate tile except at inside corners.

END OF SECTION 09.3000

SECTION 095100 - CEILINGS

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. Suspended Acoustic Tile Ceilings.
 - 2. Suspended Linear Metal Plank Ceilings.
 - 3. Suspended Security Ceiling Systems.
 - 4. Exposed suspension systems for interior ceilings.

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. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

1.5 INFORMATIONAL SUBMITTALS

- A. Shop 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. Ceiling suspension-system members.
 - 2. Structural members to which suspension systems will be attached.
 - 3. Method of attaching hangers to building structure.
 - 4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
 - 5. Size and location of initial access modules for acoustical panels.
 - 6. Items penetrating finished ceiling and ceiling-mounted items including the following:
 - a. Lighting fixtures.
 - b. Diffusers.
 - c. Grilles.
 - d. Speakers.
 - e. Sprinklers.
 - f. Access panels.
 - g. Perimeter moldings.

- B. Product test reports.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site 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.

1.7 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. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, 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. Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

1.9 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.10 WARRANTY

- A. Manufacturers 30 year warranty on panels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of suspended ceiling and its supporting suspension system, accessories and components from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. 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: Class A according to ASTM E 1264.
 - 2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL CEILING TILE (ACT-01)

- A. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E 1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
 - 1. Size: Refer to Design Selection Summary on Sheet A1.80.
- B. Color: Refer to Design Selection Summary on Sheet A1.80.
- C. Basis of Design: Refer to Design Selection Summary on Sheet A1.80. Provide products from one of the following in accordance with the requirements:
 - 1. Armstrong World Industries.
 - 2. CertainTeed Corporation.
 - 3. USG Company.

2.4 LINEAR METAL WOOD-LOOK CEILING (WD-01)

- A. Metal Pans: Complying with ASTM E1264 and formed to snap on to carriers securely, without separate fasteners.
 - 1. Smooth finish.
 - 2. Microperforated with felt backing.
 - 3. Size: Refer to Design Selection Summary on Sheet A1.80.
- B. Color: Refer to Design Selection Summary on Sheet A1.80.
- C. Accessories: Exposed accessories to match plank color and finish. Provide all accessories as recommended by Manufacturer for complete installation including but not limited to the following:
 - 1. Angled Hemmed Molding
 - 2. Black Filler Strips
 - 3. Panel End Caps
 - 4. Suspension Assembly, Carrier Beams, Support Brackets, Cross Tees and Tie Wires
 - 5. Pressure Springs
- D. Basis of Design: Metalworks Linear Classics 5492 by Armstrong World Industries. Refer to Design Selection Summary on Sheet A1.80. Provide products from one of the following in accordance with the requirements:
 - 1. Armstrong World Industries.
 - 2. CertainTeed Corporation.
 - 3. USG Company.

2.5 SUSPENDED SECURITY CEILING SYSTEMS (MTL PLANK)

- A. Planks:
 - 1. Composition:

- a. Type 1: Interlocking single layer panels, perforated, 16 gauge steel. Size: 12"W x 8'L planks.
- b. Type 2: Interlocking double layer panels, non-perforated, stainless steel. Size: 18"W x 8'L planks.
2. Color: Factory-applied polyester powder coat finish in White.

B. Suspension System: As provided by Manufacturer.

C. Accessories: Exposed accessories to match plank color and finish. Provide all accessories as recommended by Manufacturer, all associated access panels, and factory cut-outs for complete installation in accordance with the drawings.

D. Basis of Design:

1. Manufacturer: Trussbilt Security Systems:
 - a. Type 1: BarrierDek Single Skin Metal Plank Ceiling.
 - b. Type 2: TrussDek Double Skin Metal Plank Ceiling.
2. Provide products from one of the following in accordance with the requirements:
 - a. Trussbilt Security Systems.
 - b. Gordon Incorporated.
 - c. Armstrong World Industries.

2.6 METAL SUSPENSION SYSTEMS

A. Manufacturers:

1. Armstrong World Industries.
2. CertainTeed Corporation.
3. Chicago Metallic Corporation.
4. Fry Reglet Corporation.
5. Gordon, Inc.
6. United States Gypsum, Company.

B. Metal Suspension-System Standard: Manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C 635/C 635M.

C. Type 1 - Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished metal caps on flanges.

1. Structural Classification: Intermediate-duty system.
2. End Condition of Cross Runners: butt-edge type.
3. Face Design: Flat, flush.
4. Cap Material: Cold-rolled steel.
5. Cap Finish: Painted.
6. Width: Refer to Design Selection Summary on Sheet A1.80.

D. Type 2: Wide-Face, Aluminum Suspension System:

1. Structural Classification: Intermediate-duty system.
2. Face Design: Flat, flush.

3. Finish: Painted to match color indicated by manufacturer's designation.
4. Location: Wet areas.
5. Width: Refer to Design Selection Summary on Sheet A1.80.

2.7 ACCESSORIES

- A. 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.
- B. Hold-Down Clips: Manufacturer's standard hold-down.

2.8 METAL EDGE MOLDINGS AND TRIM

- A. 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify structure and MEP components that will remain exposed after ceiling installation is complete, have been painted. Do not proceed until painting is complete.
- B. 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.
- C. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

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 unless otherwise indicated.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

- A. Install ceilings according to ASTM C 636/C 636M and manufacturer's written instructions.

- 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 to miss obstructions; offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with location of hangers at spacing 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 to structure 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. 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.
 7. Do not attach hangers to steel deck tabs.
 8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 9. 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.
 10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- C. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- D. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently. Do not eccentrically load system or induce rotation of runners.
- E. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
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. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- 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 precise fit.
1. Arrange directionally patterned acoustical panels as indicated on reflected ceiling plans.
 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.

3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 4. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
 5. 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.
- G. Install linear wood panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
1. Clip wood panels to hangers using required special tools.
 2. Replace damaged wood members.
- 3.4 ERECTION TOLERANCES
- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.
- 3.5 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.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09.6500 – RESILIENT WALL BASE

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Resilient wall base and accessories.
2. Substrate preparation.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 03 30 00 - CAST-IN-PLACE CONCRETE for concrete substrate; slab surface tolerances;
2. Section 06 10 00 - ROUGH CARPENTRY for plywood substrate and surface tolerances.
3. Section 09 69 00 - ACCESS FLOORING for resilient floor covering for access panels.

C. References (Industry Standards):

1. ASTM International (ASTM):
 - a. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
 - b. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
 - c. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
 - d. ASTM F710 Standard Practice for Preparing Concrete to Receive Resilient Flooring
 - e. ASTM F1861 Standard Specification for Resilient Wall Base
 - f. ASTM F386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
2. Canadian ULC Standards (CAN/ULC):
 - a. CAN/ULC-S102.2 Surface Burning Characteristics
3. National Fire Protection Association (NFPA):
 - a. NFPA 253 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source

- b. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials
- c. NFPA 255 Test Method of Test of Surface Burning Characteristics of Building Materials

1.3 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures.

B. Product Data: Submit manufacturer's technical data sheet, care & maintenance document, submittal and/or warranty for each material and accessory proposed for use.

C. Samples: Submit representative samples of each product specified for verification.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide resilient flooring materials manufactured in the United States of America by a firm with a minimum of 10 years' experience with resilient flooring materials of type equivalent to those specified.

- 1. Manufacturer's quality management system must have ISO 9001:2000 approval.
- 2. Provide resilient flooring products, including wall base, accessories and subfloor preparation products from one manufacturer to ensure color matching and compatibility.
- 3. Manufacturer shall be capable of providing technical training and technical field service representation.

B. Installer Qualifications: Installer must be professional, licensed, insured and acceptable to manufacturer of resilient flooring materials. Project Managers or Field Supervisors must be INSTALL (International Standards & Training Alliance) certified, CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager) for the requirements of the project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.

B. Deliver materials sufficiently in advance of installation to condition materials to the required temperature for 48-hours prior to installation.

1.6 PROJECT CONDITIONS

A. Maintain temperature and humidity at service levels or the ambient temperature must remain steady ($\pm 10^{\circ}$ F) and be between 65° F and 85° F for at least 48-hours prior to, during and after installation. The ambient relative humidity is recommended to be between 40% and 65% RH; avoid dew point conditions.

1.7 WARRANTY

A. Provide manufacturer's standard limited commercial warranty to cover manufacturing defects.

PART 2 - PRODUCTS

2.1 RESILIENT WALL BASE

A. Basis of Design Manufacturer: Roppe Corporation

1. Product Name:	Pinnacles
2. Material Specification:	ASTM F1861: Type TS – rubber, vulcanized thermoset Group 1 – solid, (homogenous) Style A – Straight, Style B – Cove, Style C – Butt-to
3. Material Height:	4" (101.6 mm)
4. Material Thickness:	ASTM F386 1/8" (3.2 mm)
5. Material Length:	48" sections (1.22 m), 120' (36.58 m)
6. Limited Warranty:	1 year, Manufacturing Only
7. Material & Composition:	100% vulcanized homogenous rubber compound comprised of a premium blend & SBR rubber materials.
8. Color:	To be selected by architect from manufacturer's full range of colors
9. Surface Burning	ASTM E84/NFPA 255 Class B
10. Flammability/Critical Radiant Flux:	ASTM E648 / NFPA 253 Class 1 (>0.45 Watts per sq. cm.), .082 W/cm2
11. Smoke Density:	ASTM E662/NFPA 258 Passes (<450), 157 (flaming) - 197 (non-flaming)
12. Surface Burning:	CAN/ULC-S102.2 FSR 50, SDS 175
13. Substrate Preparation:	Per ASTM F710 and Manufacturer's Technical Data Sheet

B. Or Equals: Johnsonite, Armstrong, Nora

2.2 INSTALLATION PRODUCTS

A. Acrylic Adhesives

1. Product Name:	WB-600
2. Product Description:	Acrylic Wall Base Adhesive
3. Product Usage:	For standard, interior wall base installations over porous substrates only.
1. Product Name:	AW-510
2. Product Description:	Acrylic Wet-Set Adhesive
3. Product Usage:	For interior wall base installations that require a more aggressive bond over porous substrates only
1. Product Name:	C-630
2. Product Description:	Water-Based Contact Adhesive
3. Product Usage:	For interior wall base installations that require a more aggressive bond over porous or non-porous substrates.

2.3 MAINTENANCE PRODUCTS

A. Cleaners

1. Product Name:	NC-900
2. Product Description:	All-Purpose pH Neutral Cleaner
3. Product Usage:	For initial, daily or routine maintenance and spot cleaning.
1. Product Name:	PR-930
2. Product Description:	Performance Finish Remover
3. Product Usage:	For removal of finish that has been accidentally or erroneously applied to material.

PART 3 – EXECUTION

3.1 GENERAL

A. General Contractor's Responsibilities

1. Supply a safe, climate controlled building and subfloor as detailed in Technical Data Sheets.
2. Ensure substrate meets the requirements of ASTM F710, Technical Data Sheets and Excelsior Technical Data Sheets.
3. Ensure horizontal concrete substrates have been tested per ASTM F2170 and/or ASTM F1869 to confirm that concrete relative humidity and/or moisture vapor emission rates are within tolerance of the approved adhesive.
4. Confirm the porosity of all substrates to ensure proper adhesive usage.
5. Provide a secure storage area that is maintained permanently or temporarily at normal operating temperature and humidity conditions (except walk in freezers or similar) between 65° F and 85° F and between 40% and 65% relative humidity, for at least 48-hours prior to and during the application of the flooring, so the flooring contractor can acclimate the flooring materials per manufacturer's instructions.
6. Provide an installation area that is weather tight and maintained either permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), normal operating temperature and humidity conditions (except walk in freezers or similar) between 65° F and 85° F and between 40% and 65% relative humidity, for at least 48-hours prior to and during the application of the flooring per the manufacturer's instructions.
7. Ensure areas with direct prolonged exposure to sunlight are protected with protective UVA/UVB restrictive coatings or films.
8. Areas of the flooring that are subject to direct sunlight through doors or windows should have them covered using blinds, curtains, cardboard or similar for the time of the installation and 72-hours after the installation to allow the adhesive to cure. Note: These areas should be installed using wet adhesives only.
9. Protect newly installed flooring with construction grade paper or protective boards, such as Masonite or Ram Board, to prevent flooring damage, especially by other trades. Limit usage and foot traffic according to the adhesive's requirements. When moving appliances or heavy furniture, protect flooring from scuffing and tearing using temporary floor protection.

10. Ensure furniture casters are made of a soft material and have a contact point of at least 1" in width to limit indentation and flooring damage. All rolling chairs or seating must have a resilient flooring chair pad installed over the finished floor to protect floor covering. All fixed furniture legs must have permanent felt or soft rubber floor protectors installed on all contact points to reduce indentation. Floor protectors must have a flat contact point of at least 1" in width and must cover the entire bottom surface of the furniture leg.
11. Conduct initial maintenance prior to final usage per the Care & Maintenance Documents. Do not conduct initial maintenance until adhesive has cured per the adhesive technical data.

B. Flooring Contractor's Responsibilities

1. Provide trained installers that are professional, licensed, insured and acceptable to manufacturer of resilient flooring materials.
2. Ensure installers or installation teams meet one of the following requirements:
 - a. Have completed INSTALL (International Standards & Training Alliance) or CFI (Certified Floorcovering Installers) training programs and/or are certified by INSTALL or CFI.
 - b. Are being supervised by Project Managers or Field Supervisors that are INSTALL (International Standards & Training Alliance) certified, CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager).
3. Follow all requirements in the appropriate Excelsior Technical Data Sheets, Care & Maintenance Documents, Warranties and other technical documents or instructions.

3.2 EXAMINATION

A. General: Follow guidelines laid out in Division 01, Section 017100 – Examination and Preparation, as well as Section 014300 – Quality Assurance.

B. Verification of Conditions: Inspect all substrates to ensure they are clean, smooth, permanently dry, flat, and structurally sound.

3.3 SUBSTRATE PREPARATION

A. General: Follow guidelines laid out in Division 01, Section 017100 – Examination and preparation. All work required to ensure substrate or subfloor meets manufacturers guidelines are the responsibility of the general contractor.

B. Preparation: Ensure substrate meets the requirements of ASTM F710, Technical Data Sheets and Excelsior Technical Data Sheets. Substrates must be free of visible water or moisture, dust, sealers, paint, sweeping compounds, curing compounds, residual adhesives and adhesive removers, concrete hardeners or densifiers, solvents, wax, oil, grease, asphalt, visible alkaline salts or excessive efflorescence, mold, mildew and any other extraneous coating, film, material or foreign matter.

3.4 INSTALLATION

A. General: Follow all relevant guidelines detailed in Division 01, as well as flooring and adhesive manufacturer's technical data sheets.

B. Interface with Other Work: If caulking or sealing is required after installation, please contact the manufacturer for a suitable, matching caulk.

3.5 CLEANING

A. General: Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.

B. Initial Maintenance: Conduct initial maintenance per the manufacturer's Care & Maintenance documents

3.6 CLOSEOUT ACTIVITIES

A. General: Follow all federal, state and local requirements and Division 01 Section 017600 – Protecting Installed Construction and Section 017800 – Closeout Submittal requirements for these activities.

B. Protection: Protect newly installed material with construction grade paper or protective boards, such as Masonite or Ram Board, to protect material from damage by other trades. Limit usage and foot traffic according to the adhesive's requirements. When moving appliances or heavy furniture, protect wall base from scuffing and tearing using temporary floor protection.

END OF SECTION 09.6500

SECTION 09.6519 – RESILIENT TILE FLOORING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. This section deals with resilient flooring found in the drawings and schedules of the contract that meet the requirements of this section.

1.2 RELATED SECTIONS

- A. Section 3 – Cement: not covered in this section.
- B. Section 6 – Wood and plastic: not covered in this section.
- C. Section 7 – Thermal and humidity protection: not covered in this section.
- D. Section 9 – Other sections containing information related to floor finishes: not covered in this section.

1.3 REFERENCES

- A. ASTM F 710: Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- B. ASTM E 648: Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- C. ASTM E 662: Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- D. ASTM F 1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- E. ASTM F 2170: Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.

1.4 SUBMITTALS

- A. Provide the product's Technical Specifications data sheet as well as all Installation and Maintenance Instructions.
- B. Supply floor drawings and installation plans.
- C. Supply a set of samples measuring at least 7.5 cm (3 in.) by 15 cm (6 in.) of the complete range of colors and finishes chosen for the project.
- D. When required, provide manufacturer documentation, certified by an independent laboratory, confirming that the flooring complies with the fire standards of the following tests:
 - 1. ASTM E 648; Critical Radiant Flux: 0.45 watts/cm² or more;
 - 2. ASTM E 662; Smoke Density: 450 or less.
- E. Warranty: 15 year limited warranty

1.5 QUALITY ASSURANCE

- A. Have flooring installed by a qualified installer of this type of flooring.
- B. In accordance with the technical instructions in the Installation Instructions, use all the accessories recommended by manufacturer when installing its flooring.
- C. Follow the instructions specified in the most recent version of Manufacturer's Installation Instructions.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver the flooring to the installation site in manufacturer's original packaging. Indicate the project name and handling instructions on the outside of the boxes.
- B. Advise the carrier of any damaged material and indicate it on the packing slip.
- C. Flooring material and adhesive must be acclimated to the installation area for a minimum of 48 hours prior to installation.
- D. Store cartons of tile or plank products flat and squarely on top of one another. Preferably, locate material in the "center" of the installation area (i.e. away from vents, direct sunlight, etc.) Storing cartons in direct sunlight may affect proper acclimation by inducing thermal expansion/contraction.
- E. When palletizing on a jobsite vinyl plank or tiles need to be stacked 2 rows high side by side with no airspace between. Then quarter turned for 2 rows side by side, not to exceed 12 boxes high. A 5/8" or thicker plywood must also be placed on the pallet first. Do not stack pallet's 2 high unless utilizing a 1" thick plywood in between pallets.

1.7 SITE CONDITIONS

- A. DO NOT INSTALL RESILIENT FLOORING PRODUCTS UNTIL THE WORK AREA CAN BE TEMPERATURE CONTROLLED.
- B. The permanent HVAC system must be operational and functional and set to a minimum of 65°F (20°C) or a maximum of 85°F (29°C), for a minimum of 7 days prior to, during, and after installation. Once the installation is complete the temperature should not exceed 85°F (29°C).

1.8 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials from same production run as products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - 1. Quantity: Furnish quantity of flooring units equal to 10% of amount installed.
 - 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage, and protection of extra material.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Shaw Contract
- B. Approved Equals: Tarkett, Mannington, Armstrong

2.2 RESILIENT FLOORING DESCRIPTION

- A. Characteristics (LVT-01):
 - 1. Compound and Cast – Compound 5.0 4077V
 - 2. Overall Thickness 0.197" (5.0 mm)
 - 3. Wear Layer: 20 mil (0.02in)

4. Finish: ExoGuard+™
5. Size: 6"W x 48"L (nominal)
6. Color: Convey 43515
7. Installation Pattern: Brick
8. Static Load (ASTM F970) **Passes**
9. Residual Indentation (ASTM F1914) **Passes**
10. Resistance to Heat (ASTM F1514) **Passes**
11. Resistance to Light (ASTM F1515) **Passes**
12. Resistance to Chemicals (ASTM F925) **Passes**
13. Smoke Density (ASTM E662, Flaming Mode) **Passes**
14. Radiant Panel (ASTM E648) **Passes, Class I**
15. Coefficient of Friction (ASTM D2047, Slip Resistance) **≥0.5, meets the recommended static coefficient of friction for ADA walking surfaces**

2.3 ADHESIVES

A. In order to receive a underbed warranty, the product being installed must be approved for underbed applications (see product specification) and must be installed with S150, LokWorx + Resilient or 4151. Refer to manufacturer's installation guidelines for adhesive requirements.

B. In areas where LVT will be installed near or around wet areas, use MS Resilient Adhesive.

1. Shaw MS Resilient is a one component, 100% solids adhesive for resilient flooring, featuring low permeability, maximum moisture protection and sound deadening properties, crack isolation up to 1/8" and is impervious to concrete slab alkalinity.
2. Refer to Shaw MS Resilient technical documents for proper substrate preparation and testing, installation, and warranties.

PART 3 – EXAMINATION

3.1 EXAMINATION

A. Examine the subfloor before installation to ensure that the surface is clean, dry, smooth, structurally sound and free from foreign substances that may adversely affect adhesion or cause discoloration. Furthermore, ensure that the subfloor is free of paint, varnish, adhesive, oil, grease, solvent and other foreign substances, including treatment compounds, sealers and curing compounds that may adversely affect adhesion or alter the appearance or durability of the rubber flooring.

B. Verify the surface to ensure there is no powder, scaling or mold. If there is, remove it with a mechanical sander and level with a good-quality cement-based Portland primer.

C. Slabs that have been either using a curing agent or a sealer will have to be treated to ensure that the adhesion has not been impaired.

D. Do not install on cement slabs that have been subjected to adhesive chemical abatement, unless an approved remediation system was used afterwards.

E. Report and rectify all unsatisfactory conditions. Do not start flooring installation until all rectifications have been completed.

3.2 PREPARATION

A. All substrates to receive resilient flooring shall be dry, clean, smooth and structurally sound. They shall be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening/parting compounds, alkaline salts, excessive carbonation/laitance, mold, mildew, and other foreign materials that might prevent the adhesive from bonding

B. If the adhesive residue is asphalt-based (cut-back), or any other type of adhesive is present, it must be removed by industry accepted methods such as mechanical removal or wet scraping.

C. If a chemical abatement has been performed, use Shaw Surface Prep EXT to remove any residual chemicals present. Once Shaw Surface Prep EXT has been properly cleaned and removed, apply one coat of Shaw MRP for additional protection.

D. Adhesive removal through the use of solvents or citrus adhesive removers is not recommended. Solvent residue left in or on the subfloor may affect the new adhesive and floor covering.

E. DO NOT SAND, DRY SWEEP, DRY SCRAPE, DRILL, SAW, BEAD BLAST OR MECHANICALLY CHIP OR PULVERISE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUT BACK" ADHESIVES OR OTHER ADHESIVES

3.3 INSTALLATION

A. Concrete Subfloors:

1. Required Moisture Testing - maximum moisture level per ASTM 1869 CaCl is 8 lbs. and ASTM 2170 In-situ Relative Humidity 90% per 1000 sq.ft. in 24 hours. PH of concrete sub-floor needs to be between 7 & 10.
2. Substrates shall be smooth, structurally sound, dry, clean and free of all foreign material such as dust, wax, solvents, paint, grease, oils, old adhesive residue, curing and hardening/ curing compounds, sealers and other foreign material that might prevent adhesive bond.
3. On or below-grade slabs must have an effective vapor retarder directly under the slab.
4. Wet curing 7 days is the preferred method for curing new concrete.
5. Curing compounds (DO NOT USE). If present they can interfere with the bond of the adhesive to the concrete. Seek assistance from a substrate manufacturer if curing agents are detected.
6. Remove curing compounds 28 days after placement, so concrete can begin drying. Concrete floors shall be flat and smooth within 1/8" in 6 feet or 3/16" in 10 feet.
7. F-Number System: Overall values of FF 36/ FL 20 may be appropriate for resilient floor coverings.
8. Expansion and isolation joints in concrete are designed to allow for the expansion and contraction of the concrete. Resilient flooring products should never be installed over expansion joints. Expansion joint covers designed for use with resilient floorings should be used. Control joints (saw cuts) may be patched and covered with resilient once the concrete is thoroughly cured, dry and acclimated.
9. S150 - may not exceed 95% RH and LokWorx + Resilient Adhesive/4151 Adhesive 99% RH.
10. Concrete floors must be tested per the latest edition of ASTM F710

B. Radiant Heat

1. The heating systems components must have a minimum of 1/2" separation from the flooring product. The system must be on and operational for at least 2 weeks prior to installation to reduce residual moisture. Three days prior to installation lower the temperature to 65°F (20°C), after installation gradually increase the temperature in increments of 5°F to avoid overheating. Maximum operating temperature should never exceed 85°F (29°C). Use of an in-floor temperature sensor is recommended to avoid overheating. Contact the manufacturer of your radiant heating system for further recommendations.
2. Electric Radiant Floors: consist of electric cables (or) mats of electrically conductive materials mounted on the subfloor below the floor covering. Mesh systems are typically embedded in thin-set. When embedding the system components, use cementitious patching and leveling compounds that meet or exceed Shaw's maximum moisture level and pH requirements. Use of gypsum based patching and/or leveling compounds which contain Portland or high alumina cement and meet or exceed the compressive strength of 3,000 psi are acceptable.
3. Hydronic Radiant Floors: pump heated water from a boiler through tubing laid in a pattern under the flooring. Typically installed in channels under a wooden subfloor (or) imbedded in concrete slabs. Requires the installer follow a specific nailing pattern to avoid penetration of the heat system.

C. Existing Floorcoverings:

1. Resilient Floor Covering:
 - a. Must be single layered, non-cushion backed, fully adhered, and smooth. Show no signs of moisture or alkalinity.
 - b. Waxes, polishes, grease, grime, and oil must be removed.
 - c. Cuts, cracks, gouges, dents and other irregularities in the existing floor covering must be repaired or replaced.
2. Quarry Tile, Terrazzo, Ceramic Tile, Pour Floors (Epoxy, Polymeric Seamless):
 - a. Must be totally cured and well bonded to the concrete. Must be free of any residual solvents and petroleum derivatives. Waxes, polishes, grease, grime, and oil must be removed.
 - b. Show no signs of moisture or alkalinity.
 - c. Cuts, cracks, gouges, dents, and other irregularities in the existing floor covering must be repaired or replaced.
 - d. Fill any low spots, holes, chips and seams that may telegraph through the new flooring. Grind any highly polished or irregular/smooth surfaces.
 - e. Quarry tile or Ceramic tile grout joints and textured surfaces must be filled with an embossing leveler or substrate manufacturer approved material

3.4 CLEANING AND PROTECTION

A. Wet adhesive overspray or drips should be cleaned with soap and water on a clean cloth. Sheet Dried adhesive may require the use of a solvent adhesive cleaner. Between uses, clean the spray tip immediately with a clean wet cloth to prevent accumulation of dried adhesive. Empty aluminum spray cans should be relieved of excess pressure and recycled or disposed of in accordance with local requirements.

B. Recommended to perform a bond test in order to determine adhesive working time per job site conditions. The strength of the bond test will indicate whether Shaw 9050 floor primer is necessary.

1. 9050- PH BLOCKER/FLOOR PRIMER: 9050 is an acrylic solution made to neutralize excess alkali that is also recommend as a primer coat to prevent over absorption of adhesive and to ensure a better bond. Formulated with an antimicrobial agent, it provides protection against bacteria, fungi, and mildew in the wet or dry state. Contains no solvent, alcohol, or other hazardous materials per OSHA 29 CFR 1910.1200. Non-photo chemically reactive per rule # 102. Available in 4 -gallon pails.

C. Dry mop floor using a micro fiber mop pad or appropriate floor vacuum to remove dust particulate from the floor.

D. Spray neutral pH cleaner, such as Shaw TOTALCARE® Hard Surface Cleaner or Diversey Stride, onto the floor in manageable area (spray mist will dry quickly). Use a micro fiber wet mop pad to mop the floor with cleaner. If pad becomes dirty, be sure to replace the pad with a new micro fiber wet mop pad. Work floor in sections.

E. Always rinse the floor with water only by mopping water to remove any remaining residue from the floor.

F. In the event where dry wall dust/construction dust is mopped with water only, a residue film will appear on the floor after drying. Use the process below to remove the film from the floor.

END OF SECTION 09.6519

SECTION 09.6710 – FLUID APPLIED FLOORING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fluid applied seamless flooring with integral cove base.
2. Accessories necessary for complete installation.
3. Preparation of flooring substrate.
4. Protection of adjacent materials and substrates.

B. Related Sections:

1. Cast-in-Place Concrete: Section 03300.
 - a. Concrete sub-floor to be level (maximum variation not to exceed 1/4 inch in 10 feet) and to have a steel troweled finish. No curing agents or other additives which could prevent bonding should be used unless the mechanical surface preparation method completely removes the curing agent residue or sealer.
 - b. Slabs on grade must have an efficient puncture resistant vapor barrier placed directly under the slab.
2. Sealants: Section 07920.
3. Gypsum Drywall: Section 09250.
4. Adjacent floor finishes: Division 9.

1.02 REFERENCE STANDARDS

The publications listed below from a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American Society for Testing and Materials (ASTM) Publications:

C-307	Test Method for Tensile Strength of Chemical-Resistant Mortars.
C-501	Test Method for Relative Resistance to Wear Unglazed Ceramic Tile by the Taber Abraser.
C-531	Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing.

- C-579 Test Methods for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfaces.
- C-580 Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing.
- C-884 Test Method for Thermal Compatibility Between Concrete and an Epoxy Resin Overlay.
- D-570 Water Absorption of Plastics.
- D-695 Compression Properties of Rigid Plastic.
- B. ACI 301 Specifications for Structural Concrete for Buildings (most recent edition). Committee in Concrete 403 bulletin 59-43, Bond Strength to Concrete.

1.03 DEFINITIONS

- A. Epoxy Resin Flooring specified under this section is referenced on the drawings as Key Mortar SLT.

1.04 SYSTEM DESCRIPTION

- A. System shall be a nominal 80-125 mils textured epoxy surfacing with broadcast aggregate to form a skid resistant surface. Surface finish shall be the Key #570 Hybrid Polysiloxane.

1.05 SUBMITTALS

- A. Samples: Submit 6 by 6 inch cured samples of flooring system indicating color combination and non-skid properties. Approved samples will be used during installation for product match.
- B. Certified Test: Submit two copies of suppliers/manufacturers written certification that flooring system meets or exceeds required properties.
- C. Manufacturers Application Instructions: Submit descriptive data and specific recommendations for mixing, application, curing including any precautions of special handling instructions required to comply with the Occupational Safety and Health Act.
- D. Shop Drawings: Shop Drawings shall be furnished showing installation of cove base and termination details, and details at floor material transitions and where adjoining equipment.
 - 1. Locate and provide detailing for flexible joints required for flooring in area of installation.
- E. Maintenance Instructions: Submit current copies of the flooring manufacturer's printed recommendations on maintenance methods and products. Submit in accordance with Section 01730 - Operation and Maintenance Manuals.

1.06 QUALITY ASSURANCE

- A. Materials used in the floor surfacing shall be the products of a single manufacturer.
- B. Installation shall be performed by an applicator with minimum 3 years' experience in work of similar nature and scope. Installer must be approved by the manufacturer of the floor surfacing materials. The contractor shall furnish a written statement from the manufacturer that the installer is acceptable.
- C. Installer to verify locations of all flexible joints required by the provisions of this Section and by the recommendations of the related material manufacturers.
 - 1. Joint locations may or may not be shown in drawings.
 - 2. Refer to drawings required under SUBMITTALS above.
- D. Installer to keep daily log of the date of installation, room number, type, color, and method of application of product being installed. Log must be available for inspection by the Architect upon request.
- E. Contractor to have proven experience with specified system.
- F. Portable mock-up: Prior to starting application of flooring, provide full scale portable mock-up to establish acceptable quality, durability, and appearance. Mock-up size must not be less than 4 square feet.
 - 1. Acceptable mock-up to be standard of quality for installed work.
 - 2. Unacceptable installed work to be removed and replaced until acceptable. Aesthetically unacceptable but well bonded work may be overlaid or recoated per Manufacturer's instructions if thickness clearances permit.
- G. Qualifications:
 - 1. Installer: Must be acceptable to Architect, and Manufacturer.

1.07 PROJECT CONDITIONS

- A. Maintain the ambient room and the floor temperatures at 60 degrees Fahrenheit, or above, for a period extending from 72 hours before, during and after floor installation. Concrete to receive surfacing shall have cured for at least 28 days and shall have been free of water for at least 7 days.
- B. Dew Point: Substrate temperature must be minimum of 5 degrees above dew point prior to, during or up to 24 hours after application of flooring system.
- C. Illumination: Apply flooring system only where a minimum of 30 footcandles exist when measured 3 feet from surface.
- D. Advise other trades of fixtures and fittings not to be installed until flooring is cured and protected.

1.08 PROTECTION

- A. Protect adjacent surfaces not scheduled to receive the flooring by masking, or by other means, to maintain these surfaces free of the flooring material.
- B. Provide adequate ventilation and fire protection at all mixing and placing operations. Prohibit smoking or use of spark or flame producing devices within 50 feet of any mixing or placing operation.
- C. Provide polyethylene or rubber gloves or protective creams for all workmen engaged in applying products containing epoxy.

1.09 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered to project site in original manufacturer's sealed containers including type of material, batch numbers, date of manufacture, and pertinent labels intact and legible.
- B. Store materials in dry protected area at a temperature between 60° F to 80° F.
- C. Follow all manufacturer's specific instructions and prudent safety practices for storage and handling.

1.10 WARRANTY

- A. Contractor to guarantee work under this Section to be free from defects of material and installation for the duration of the warranty period. Defects occurring during warranty period shall be repaired, in a manner satisfactory to the Owner and the Architect, at no additional cost to the Owner.
 - 1. Warranty Period: One (1) Year.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Specifications and quality of design standard (basis of design) based on Key Resin Company: Key Mortar SLT
Key Resin Company: 888-943-4532, www.keyresin.com
Local Representation: Jon Lattin, CSI, CCPR, jon@ctslv.com

Approved equals: Laticrete, Crossfield, Tate, Inc.
- B. System description: Heavy duty, three-component epoxy resin surfacing broadcast with silica aggregate for non-skid texture.
- C. Alternative manufacturers must have as a minimum the standards set forth in this specification and must be preapproved in accordance with project requirements.

2.02 MATERIALS

- A. Prime Coat: Two component penetrating damp-proof epoxy.
- B. Matrix: Two component, 100% solids epoxy matrix (Key #511) with blended self-leveling aggregate composition.
- C. Broadcast Aggregates:
 - 1. 50-70 mesh broadcast silica with a minimum Mohs. hardness of 6.
- D. Grout and Topcoats:
 - 1. Two component epoxy grout, Key #511 pigmented.
 - 2. Two component epoxy sealer, the Key #570 Hybrid Polysiloxane.
- E. Cove Base: Two component epoxy cove paste, Key #510-CV with blended aggregates.

2.03 MIXING

- A. Apply flooring to specified physical properties.
- B. Provide slip-resistant, cleanable textured finish. Samples to be approved by Owner and Architect.

2.04 FINISHES

- A. Color as selected by Architect or Owner from the manufacturer's standard colors.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Obtain Architect's approval of mock-up before installing flooring; see QUALITY ASSURANCE in PART 1.
- B. Preparation of Surface:
 - 1. Inspect surfaces to receive flooring and verify that condition is smooth and free from conditions that will adversely affect execution, permanence, or quality of work.
 - a. Remove all projections, all debris detrimental to flooring system, and dirt, oil contaminates, grease, and surface coatings affecting bond.
 - 2. Notify Architect or Owner in writing prior to commencing work of any conditions deemed unsatisfactory for the installation; installation of flooring materials is understood as acceptance of the substrate as satisfactory.
 - 3. Concrete: The General Contractor shall be responsible for hiring an independent testing service to test for moisture content and moisture vapor emission rate; install no flooring over concrete until the concrete has been cured and is sufficiently dry to

achieve acceptable bond with flooring as determined by material manufacturer's recommended bond and moisture tests.

- a. Effectively remove concrete laitance by steel shot blasting or other mechanical method approved by flooring manufacturer.
- b. Testing must be done to verify that the moisture vapor emission rate of the slab does not exceed that as recommended by the manufacturer at time of installation of the flooring or at any future date. Moisture vapor emission and moisture content testing must conform with the requirements of ASTM F-1869-98 (Calcium Chloride Test) or ASTM F-2170-02 (Relative Humidity Probe Test). If test results show excessive levels of moisture content or vapor emission rate, installation shall not proceed until source of excessive moisture is identified and removed or corrected. If excessive moisture cannot be removed or prevented, apply manufacturer's recommended moisture vapor emission control material.
- c. Treat cracks in concrete using manufacturer's recommended practices. Rout out crack and fill with rigid epoxy; Reinforce crack with fiberglass cloth. Refer to section 3.02.B.

3.02 INSTALLATION

- A. Install all floor materials in strict conformance with manufacturer's instructions.
- B. Route out all cracks (larger than hairline width) and fill with Key Crack Filler or other material approved by Manufacturer of floor materials.
- C. Integral Cove Base: Where scheduled, provide 4-inch integral cove base formed from flooring over tile backerboard as specified elsewhere. If required, provide cove cap strip at top of base as recommended by flooring manufacturer and trowel material up wall to form smooth, integral transition and base to the specified height.
- D. Prime entire surface with recommended primer.
- E. Apply epoxy matrix and broadcast aggregate to achieve a minimum thickness of 80-100 inch.
- F. Apply epoxy grout and urethane seal coats to provide a uniform, dense surface.
- G. Match finished work to approved samples, uniform in thickness, sheen, color, pattern and texture, and free from defects detrimental to appearance.
- H. Apply temporary protection until floor is fully cured. The General Contractor shall protect the finished floor from the time that the sub-contractor completes the work.

END OF SECTION 09.6710

SECTION 09.6813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Division 01 Specification Sections

1.2 SUMMARY

A. This section relates to carpet tile

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation methods and as follows:

1. Yarn: Textile manufacturer's current ATMI certification report or evidence of current ATMI "E3" certification.
2. Carpet: Submit a cut sheet for all carpet types and carpet materials, indicating compliance with CRI Green Label Test Program VOC Limits.
3. Adhesives: Specified certification.
4. Certification of post-consumer recycled content for yarn, carpet backing, and separate cushions.

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 Stripping and Accessory: 12-inch- (300-mm-) long Samples.

D. Product Schedule: Use same room and product designations indicated on Drawings and in schedules.

E. Product Certificates: Submit manufacturers' certifications or cut sheets for all carpet types and components indicating compliance with specified requirements, including requirements for the percentages of post-industry recycled content and post-consumer recycled content.

F. Maintenance Data: For carpet tile to include in maintenance manuals specified in Division 1. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule. Training shall include instruction in the use of recommended bio-degradable cleaning products.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.

B. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

C. Indoor Air Qualifications: Provide carpet and related carpet materials that meet or exceed the VOC limits established by the Carpet and Rug Institute (CRI) Green Label Test Program.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with CRI 104, Section 5, "Storage and Handling."

1.6 PROJECT CONDITIONS

A. General: Comply with CRI 104, Section 6.1, "Site Conditions; Temperature and Humidity."

B. Environmental Limitations: Do not install carpet tile until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

C. Do not install carpet tile 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.

D. Where demountable partitions or other items are indicated for installation on top of carpet tile, install carpet tile before installing these items.

1.7 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Carpet Tile Warranty: Written warranty, signed by carpet tile manufacturer agreeing to replace carpet tile that does not comply with requirements or that fails within specified warranty period. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse. Fail-

ures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.

1. Warranty Period: As indicated in manufacturers written literature.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, 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.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Carpet Tile

1. Refer to Drawings, FINISH LEGEND AND SCHEDULE

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided by or recommended by carpet tile manufacturer to level or raise area under carpet tiles to the level as required and indicated, according to the Construction Documents.

1. Gypsum-based products will not be Permitted!

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products 36 and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and that is recommended by carpet tile manufacturer. Adhesives shall be manufactured in accordance with referenced "Green Seal" and CRI "Green Label" standards.

1. VOC Limits: Provide adhesives that comply with the following limits for VOC content when tested according to ASTM D 5116:
 - a. Total VOCs: 10.00 mg/sq. m x h.
 - b. Formaldehyde: 0.05 mg/sq. m x h.
 - c. 2-Ethyl-1-Hexanol: 3.00 mg/sq. m x h.
2. Carpet adhesives shall not exceed 50 g/L as per EQc4.1.

B. Primer (if needed): 9050 is an acrylic solution made to neutralize excess alkali that is also recommend as a primer coat to prevent over absorption of adhesive and to ensure a better bond. Formulated with an antimicrobial agent, it provides protection against bacteria, fungi, and mildew in the wet or dry state. Contains no solvent, alcohol, or other hazardous materials per OSHA 29 CFR 1910.1200. Non-photo chemically reactive per rule #102. Available in 4-gallon pails.

C. Leveling and Patching Compounds: Use a cementitious patching/leveling compound that meets or exceeds the required moisture level and pH requirements. Use of gypsum-based patching and/or leveling compounds which contain Portland or high alumina cement and meet or exceed the compressive strength of 3,000 psi are acceptable.

D. Transition Strips

E. Cove Base Accessories:

1. Angle Profile
2. Detail Profile
3. Quarter Round

PART 3 - EXECUTION

3.1 EXAMINATION

A. Substrates shall be smooth, structurally sound, permanently dry, clean and free of all foreign material such as dust, wax, solvents, paint, grease, oils, old adhesive residue, curing and hardening/ curing compounds, sealers and other foreign material that might prevent adhesive bond.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
2. Subfloor finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving carpet tile.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

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

3.2 LAYOUT AND INSTALLATION

A. Start the tile installation as near to the center of the room as possible and position it to use the largest perimeter cut tile size.

B. Snap a chalk line parallel to one major wall bisecting the starting point. It may be necessary to offset the center chalk line to assure perimeter tiles will be at least half size.

C. Snap a second chalk line from the starting point at 90° to the first line. Use a 3-4-5, 6-8-10, or larger triangle depending on the room size. Meters or feet may be used to lay out the triangle in these proportions.

D. Install each full carton and complete an entire pallet before starting another pallet to minimize product variation. Each tile has directional arrows on the back. These arrows allow for one-directional or multi-directional installation. Some styles may be large scale or linear in design and require quarter turning. If you are unsure about whether your product requires a quarter turned installation, please contact 1.877.502.7429. Numbers within the arrows are for manufacturing purposes and are not related to installation.

E. Begin installation at the intersection of two chalk lines. Continue until you complete one quadrant. Proceed to an adjoining quadrant until all four quadrants are completed. Larger areas may require chalk lines bisecting the original four quadrants.

F. Install tiles using the pyramid technique. This gives you multiple alignment checks. If the edges do not align and the misalignment increases with progression of the installation, find and correct the source of the problem.

G. Carpet tiles come in various sizes. All Shaw tiles have directional arrows on the back of the tile. Slide tiles into position to prevent yarn from being trapped between the tiles. Trapped yarn will adversely affect the appearance of the installation and will cause alignment problems.

H. Tiles must fit snugly, but not be compressed. Press the entire surface of the tile to ensure adhesion. Check for fit by measuring the length of ten full tiles after installation. The measurement must not be less than, or exceed by more than 1/4 inch, the length of the tiles being multiplied by ten. For example: if 24" X 24" tiles are being installed, the measurement should be between 240 and 240 1/4 inches.

I. Measure and cut tiles from the back using a straight edge. Be sure the arrows are pointing in the correct direction.

J. Roll the entire installation with a 75 lb. or greater roller to assure the proper adhesion to the substrate.

3.3 MAINTENANCE

A. Post-installation Care

1. Place plywood over the carpet when heavy objects will be moved within 24 hours after installation.

B. Preventative Floor Care

1. Use protective chair mats under chairs with casters.
2. Use soil removal mats at exterior entrances.
3. Use absorbent mats in areas where moisture, oil and grease are present.

C. Routine Maintenance

1. Set a schedule depending on traffic and vacuum regularly.
2. Remove spots with spot removers as soon as they occur.
3. Use encapsulation agents periodically.
4. Clean with hot water extraction periodically.

END OF SECTION 09.6813

SECTION 097200 – VINYL WALLCOVERING

PART 1 - GENERAL

1.1 SUMMARY

A. Related Sections

1. Section 09250 – Gypsum Board: Wall Substrates
3. Section 09900 – Painting: Preparation and priming of substrate surfaces

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. E 84 Test Method for Surface Burning Characteristics of Building Materials

B. Wallcovering Association (WA):

1. WA-101-2011 Quality Standard for Polymer Coated Fabric Wallcovering

C. Federal Specifications (FedSpec):

1. CCC-W- 408A Wallcovering, Vinyl Coated

D. Underwriter Laboratory, Inc. (UL):

1. UL 723: Test for Surface Burning Characteristics of Building Materials

E. National Fire Protection Agency (NFPA):

1. NFPA 101 Life Safety Code
2. NFPA 286 Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
3. CAN/ULC-S102 Test for Surface Burning Characteristics of Building Materials and Assemblies

F. National Fire Protection Agency (NFPA)

1.3 SUBMITTALS

- A. Submit one color proof for approval prior to manufacture.
- B. Submit one full size miniature strike-off for approval.
- C. Submit manufacturers' product data and installation instructions.

1. Include data on physical properties, fire hazard classification and fire detection characteristics of wallcovering.
 2. Include manufacturer's recommendations for maximum permissible moisture content of substrates.
- D. Submit full-size samples, 54 inches wide by 36 inches long, cut from current production of each ground wallcovering selected to demonstrate quality, weight, color and embossing.
- E. Submit manufacturer's written product certification that all furnished wallcovering ground meets or exceeds the specification requirements. Include certified copies of tests specified.
- F. Submit wallcovering ground manufacturer's written instructions for recommended maintenance of each type of wallcovering required.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Provide each type of digitally printed vinyl wallcovering mural required produced by one manufacturer whose published product literature clearly indicates compliance of wallcovering ground with specified requirements.
- B. Applicator: Installation by skilled commercial wallcovering applicators with no less than three years of documented experience installing wallcovering murals of the types and extent specified for the project.
- C. Material Standards: Provide materials that meet or exceed Federal Specification CCC-W-408A and WA-101 Quality Standard for Polymer Coated Fabric Wallcovering for Type I and Type II wallcovering.
- D. Fire Hazard Classification: Provide materials that comply with Class A fire rating when tested in accordance with ASTM E84.
- E. Underwriters Laboratories approval: Provide materials that have been tested and approved by Underwriters Laboratories.
- F. Smoke Toxicity: Provide materials that have been tested for smoke toxicity and approved for use by New York City Materials and Equipment Acceptance Division (MEA).
- G. Fire Detection Characteristics: Provide materials that have been laboratory tested for the Early Warning Effect® in accordance with ASTM E 603. Submit test results certifying that when one square foot section of the material is heated to 300 degrees F, the wallcovering emits an odorless, colorless non-toxic vapor that will activate an ionization smoke detector.
- H. Low Emissions: Provide materials that meet the requirements of California Integrated Waste Management Board's Special Environmental Requirements Specification CA 01350 for low emitting materials.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver digitally printed vinyl wallcovering mural to the project site in unbroken and undamaged wrappings and clearly labeled with the manufacturer's identification label, quality or grade, UL label and sidemark.

B. Store materials in a clean, dry storage area with temperature maintained above 55 degrees with normal humidity.

C. Store material in a flat position to prevent damage to roll-ends. Do not cross stack material. Support material off the floor in a manner to prevent sagging and warping.

1.6 PRODUCT CONDITIONS

A. Do not apply digitally printed wallcovering when surface and ambient temperatures are outside the temperature ranges required by the wallcovering manufacturer.

B. Provide continuous ventilation and heating facilities to maintain substrate surface and ambient temperatures above 60 degrees F unless required otherwise by manufacturer's instructions.

C. Apply adhesive only when substrate surface temperature or ambient temperature is above 60 degrees F, or relative humidity is below 40 percent.

D. Maintain constant recommended temperature and humidity for at least 72 hours prior to, throughout the installation period and for 72 hours after wallcovering installation completion.

E. Provide not less than an 80 foot candles per square foot lighting level minimum measured mid height at substrate surfaces.

1.7 WARRANTY

A. Submit manufacturer's 5 year written warranty against manufacturing defects.

PART 2 - PRODUCTS

2.1 MATERIALS

A. VWC-01 & VWC-02

1. Wallcovering: Type II Bespoke DW13 Textured Vinyl Wallcovering,
2. Manufacturer: DesignTex
3. Product: DW13 Substrate
4. Protective Coating: Guardian Protective UV2 Coating
 - a. Color: Artwork provided by Architect
 - b. Contents: 100% PVC face with polyester non-woven backing
 - c. Widths/Sizes: 54" (52" max. printable width)
 - d. Weight/Thickness: 20 oz./lin. yd.
 - e. Print Technology: UV curable inkjet
 - f. Fire Rating: ASTM E84: Class A
 - g. ASTM 793: Meets Type II Standards for abrasion, crocking, washability and scrubbability

- h. Mold/Mildew/Bacteria Resistance: ASTM G21: Passed all requirements of CCCW-408-D
 - i. Warranty: 5 year limited warranty for performance unless otherwise specified
 - j. Approved Equals: National Wallcovering, Koroseal
- B. Available Manufacturers: Subject to compliance with requirements, provide the named product or comparable product by one of the following:
 - 1. Wolf Gordon
 - 2. Tri-Kes
 - 3. Maharam
- C. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 – Product Substitution Procedures

2.2 ACCESSORIES

- D. Adhesives:
 - 1. Digital Wallcovering: heavy-duty premixed vinyl adhesive.
 - 2. Textured wallcovering: heavy duty clay-based, mildew-inhibiting adhesive
- E. Substrate Primer/Sealer: White pigmented alkyd or acrylic/latex base primer specifically formulated for use with vinyl wallcoverings.

PART 3 - EXECUTION

3.1 EXAMINATION

- F. Examine substrates and installation conditions.
- G. Test substrates with a suitable moisture meter and verify that moisture content does not exceed 4 percent
- H. Verify substrate surfaces are clean, dry, smooth, structurally sound and free from surface defects and imperfections that would show through the finished surface.
- I. New drywall should be finished to a Level 4 as per the Gypsum Association guidelines (www.gypsum.org), although a Level 5 is preferred, to avoid telegraphing of any imperfections. Follow with a pigmented primer.
- J. Evaluate all painted surfaces for the possibility of pigment bleed-through.
- K. Notify the contractor and architect in writing of any conditions detrimental to the proper and timely completion of the installation. Beginning of installation means acceptance of surface conditions.
- L. Existing walls present varied conditions—glossy surfaces should be sanded and mildew should be cleaned off with a solution of two cups bleach per gallon of water. Unless firmly bonded to the wall, old wallcovering should be scraped and removed. We do not recommend hanging vinyl wallcovering over

existing vinyl. Nicks, gouges, and other surface blemishes must be filled and sanded smooth. Follow with a pigmented, adhesion-promoting primer.

3.2 INSTALLATION

- M. Allow all Type II wallcoverings to acclimatize to the area of installation a minimum of 72 hours before installation.
- N. Before cutting, examine image and color and determine that they are the correct image and color as specified for the correct location.
- O. Read and follow the instructions in the manufacturer's installation sheet contained in each roll of the digitally printed vinyl wallcovering mural.
- P. Use adhesive recommended by the wallcovering manufacturer.
- Q. Install each panel in sequence as indicated on the drawings.
- R. If there are variations in color or image that are considered to be excessive, notify the manufacturer's representative for an inspection before any further wallcovering is installed.
- S. Smooth wallcovering to the hanging surface using a stiff bristled sweep brush to eliminate air bubbles, wrinkles, gaps and overlaps.
- T. Take extra care in keeping the adhesive off the face of the wallcovering. Remove excess adhesive along finished seams immediately after each wallcovering strip applied. Use clean warm water, a natural sponge and clean towels. Change water often to maintain water cleanliness.
- U. Avoid cutting narrow widths of material for placement above doors and below windows. Vertical joints should not occur less than six inches from inside or outside corners. When trimming at chair rails and ceilings, always use a broad knife rather than a straight edge.

3.2 CLEAN-UP COMPLETION

- A. Upon completion of the work, remove surplus materials, rubbish and debris resulting from the wallcovering installation. Leave areas in neat clean and orderly condition.

END OF SECTION

SECTION 09.9100 – PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems.
- B. Paint and finish all new and existing, exterior and interior exposed surfaces throughout the building as indicated on the Drawings, as listed on the Painting Schedule in Part 3 of this Section, as specified herein, and as needed for a complete and proper installation.
- C. Work not included:
 - 1. Unless otherwise indicated, painting is not required on surfaces in concealed areas and inaccessible areas such as furred spaces and the area above suspended ceilings;
 - 2. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze, and similar finished materials will not require painting under this Section unless otherwise indicated;
 - 3. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators, linkages, sensing devices, and motor shafts, unless otherwise indicated;
 - 4. Do not paint over required labels or equipment identification, performance rating, name, or nomenclature plates;
 - 5. Metal surfaces of pre-finished galvalume and galvanized steel, metal roofing, metal fascia and trims, metal siding, metal ceiling, all galvanized bollards, all exposed zinc coated steel plates, anchors, and fasteners, etc. that have galvalume or galvanizing will not require painting under this Section unless otherwise indicated.
- D. Definitions: "Paint" or "Epoxy" as used herein, means coating systems materials including primers, emulsions, epoxy enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.
- E. Related work: Priming or priming and finishing of certain surfaces may be specified to be factory-performed or installer-performed under pertinent other Sections.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of topcoat product indicated.

- C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
- E. Color selection and samples:
 - 1. Colors will be selected by the Architect from one or more of the specified manufacturers paint lines. Submit samples on rigid cardboard 8-1/2 inches by 11 inches in size with the Architects scheduled colors and glosses applied, for approval before starting work. Sample panels shall be resubmitted to the Architect until final approval is granted. Finished work shall match approved samples;
 - 2. The Architect may select, allocate, and vary colors on different surfaces throughout the Work, subject to the following:
 - a. Exterior work: A maximum of four different colors will be used, with variations for trim, doors, miscellaneous work, and metal work;
 - b. Interior work: A maximum of eight different pigmented colors will be used, with variations for trim, wall surfaces and wainscots;
 - c. Dark tones: A maximum of four dark tones will be used as accent colors for the interior;

1.4 QUALITY ASSURANCE

- A. MPI Standards:
 - 1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
 - 2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

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 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Protection:
 - 1. Remove or protect during painting, all finish hardware, accessories, fixtures, plates, lighting fixtures, and similar items installed prior to painting and not required to be painted. If removed, carefully replace and adjust on completion of painting;
 - 2. Furnish and lay drop cloths in all areas where painter's finish work is being done, to protect floors and all other adjacent work and materials from defacement. Remove all temporary protections and coverings from the work and repair or replace finishes;
 - 3. Any damage resulting from neglect of the above requirements shall be repaired at the Contractor's expense to the complete satisfaction of the Architect.
- D. Environmental Conditions:
 - 1. No exterior painting shall be done in rainy, damp or frosty weather, or until surface is thoroughly dry. No interior painting or finishing shall be permitted until the building has reached a temperature and humidity level recommended by the manufacturer of the paint products being applied;
 - 2. Maintain temperature of rooms at 70 degrees F or higher where varnish, lacquer or enamel is being applied and at 50 degrees F or higher during other painting and finishing. Exterior painting shall be done only when air temperature is 40 degrees F or higher and only in dry weather;
 - 3. Apply material under adequate illumination and ventilation;
 - 4. In the event excessive moisture is present, the General Contractor shall provide the necessary ventilation to establish appropriate conditions. Should the surface be too dry for the product application, the Painting Contractor shall provide the necessary methods to establish the appropriate conditions.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional 10 percent, but not less than 1 gallon of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: All paint materials and their related products specified herein are based on products of first grade and top line manufactured products, of Sherwin-Williams Company. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Benjamin Moore & Co.
 - 2. PPG Architectural Finishes, Inc.
- B. Semi-transparent colored stain for architectural millwork items shall be by Minwax, or alternatives of the quality necessary to meet the specifications, offering a range of colored semi-transparent colored stain selections, and as approved by the Architect.

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

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 work. Correct conditions detrimental to timely and proper completion of the Work prior to proceeding.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Plaster: 12 percent.
 - 5. Gypsum Board: 12 percent.
 - 6. Plaster: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with finishes and primers.

- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates 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.
- B. Remove plates, machined surfaces, and similar items already in place that 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 if any.
 - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Spackle all wall cracks, voids and similar imperfections, in drywall and plaster.
- E. Clean all metal free from dust and grease and carefully wire brush to remove all rust or scale. Sand badly rusted spots until metal is clean. Sheet metal, steel and cast wrought iron with priming coat applied, shall be cleaned of debris, and if necessary, the marred surfaces shall be primed before applying the first coat. Clean and lightly sand prefinished metals, such as rooftop mechanical equipment thoroughly before applying the first coat.
- F. Galvanized materials shall receive a prime coating of an approved galvanized primer, such as zinc dust. Apply zinc chromate or an equivalent primer as recommended by the paint and aluminum alloy manufacturer to aluminum work, which is specified or noted as being painted.
- G. Thoroughly clean, sand, and wipe woodwork to remove all surface dirt.
 - 1. Fill nail holes or similar imperfections smooth with putty after prime coat has become dry and hard. On natural finish wood, the nail hole compound shall be pigmented to match the face veneer.
- H. Prepare surfaces of masonry to be painted in strict conformance with the recommendations of the paint manufacturer. Insure that all loose material and material that will dust or dislodge when lightly abraded has been completely removed from masonry surfaces before the application of paint materials.

- I. Prepare previously painted and prime coated product surfaces in strict conformance with the recommendations of the Paint Manufacturer. All previously painted surfaces shall be thoroughly cleaned before applying the first coat.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 1. Apply materials with roller or brush, except that spraying will be permitted for items such as mechanical equipment, grilles, or similar items. Mask off adjoining areas not receiving a spray finish against overspray.
 2. Paint surfaces behind movable equipment and furniture items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture items with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- 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.
- E. Allow exterior paints and finishes to dry at least 48 hours between coats. Allow interior paints to dry at least 24 hours between coats. Allow enamels, lacquers and varnishes to dry at least forty-eight hours between coats. Sand lightly between coats with No. 00 sandpaper and dust well before succeeding coat is applied. Allow additional drying time if conditions warrant, to assure that all coats are perfectly dry before applying succeeding coats.
- F. Review with the Architect prior to application the surface texture of all painting and finishing. Submit samples, if requested, for approval.
- G. All materials throughout shall receive the manufacturer's recommended primer before the finish coats are applied. Touch-up shop applied prime coats, which have been damaged, and touch-up bare areas prior to start of finish coats application.
- H. Miscellaneous surfaces and procedures:
 1. Exposed mechanical items:
 - a. Finish electric panels, access doors, conduits, pipes, ducts, grilles, registers, vents, hangers, and items of similar nature to match adjacent wall and ceiling surfaces, or as directed;
 - b. Paint visible duct surfaces behind vents, registers, and grilles flat black;

- c. The painting of mechanical piping and equipment shall include the painting of non-ferrous piping and valve and trap bodies in finished spaces;
- d. Paint exterior louvers, dampers, and grilles in colors as selected by the Architect;
- 2. Exposed electrical items: Paint all exterior electrical items in colors as selected by the Architect;
- 3. Paint hollow metal and miscellaneous metal installations in unfinished spaces;
- 4. Paint metal doors in unfinished spaces.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 FINISH

- A. Finished surfaces shall be uniform in finish and color and free of brush marks, sagging, corduroy and other imperfections. Should any coat be judged unsatisfactory, sandpaper or otherwise clean off this coat and apply another. If the undercoating is disturbed, complete refinishing will be required. Where necessary for proper coverage, one additional coat shall be applied by the painter without any additional cost to the Owner.
- B. Edges of paint or finish adjoining other materials or colors shall be sharp and clean without overlapping.
- C. Should workmanship be found defective, proper preparatory work shall be done and additional coats applied as necessary to give finish in accordance with specified requirements.

3.6 PAINTING SCHEDULE

- A. The following paint schedule shall generally cover the type of paint required for the project based on Sherwin Williams Company. Verify finishes with finish schedule and Architect prior to application. Verify first coat in accordance with manufacturer's recommendation for previously painted surfaces.

INTERIOR PAINT SCHEDULE

Masonry and Concrete – ceilings and soffits - flat finish

Primer: Loxon Concrete and Masonry Primer
2 finish coats: ProMar 200 Zero VOC flat

Masonry and Concrete – eggshell finish

Primer: Loxon Concrete and Masonry Primer
2 finish coats: ProMar 200 Zero VOC eggshell

CMU – eggshell finish

Filler: ProIndustrial HD Block Filler
2 finish coats: ProMar 200 Zero VOC eggshell

CMU –Pre-Catalyzed EPOXY (eggshell finish or semi-gloss finish)

Light Commercial, Dry Laboratories and Rest Rooms

Filler: ProIndustrial HD Block Filler
2 finish coats: ProIndustrial Pre-Catalyzed Water-Based Epoxy
semi-gloss

Gypsum – ceilings and soffits- flat finish

Primer: ProMar Ceiling Paint flat
Finish coat: ProMar Ceiling Paint flat

Gypsum – eggshell finish

Primer: ProMar 200 Zero Primer
2 finish coats: ProMar 200 Zero VOC eggshell

Gypsum – semi-gloss finish

Primer: ProMar 200 Zero VOC Primer
2 finish coats: ProMar 200 Zero VOC semi-gloss

Gypsum – Pre-Catalyzed EPOXY

Light Commercial, Dry Laboratories and Rest Rooms

Primer: ProMar 200 Zero VOC Primer
2 finish coats: ProIndustrial Pre-Catalyzed Water-Based Epoxy
eggshell

Wood- painted – semi-gloss finish

Primer: ProMar 200 Zero VOC Primer
2 finish coats: Solo 100% Acrylic Latex, semi-gloss

Ferrous Metal and Non-Ferrous Metal – Doors, Frames, non-traffic Stair components and miscellaneous Metals, including elevator frames and doors

Primer: ProIndustrial Pro-Cryl Universal Primer
2 finish coats: ProIndustrial Pre-Catalyzed Water-Based Epoxy, semi-gloss

Concrete Floors – (pigmented or clear)

2 finish coats: ArmorSeal 8100 WB Epoxy coating,

Exposed Ceilings:

Primer (Ferrous and Non-Ferrous Metal): ProIndustrial Pro-cryl Universal Primer

2 coats: Low VOC Waterborne Acrylic Dryfall, **Flat** B42-W00081

OR Low VOC Waterborne Acrylic Dryfall, **Eg-shell** B42-W00082

EXTERIOR SCHEDULE

Exterior AES

Primer: MacroPoxy 646 Epoxy

2 finish coats: Hi Solids Polyurethane, semi-gloss

Ferrous Metal and Non-Ferrous Metal – Doors, Frames, Stair components and miscellaneous metals

Includes, but is not limited to, elevator frames and doors

Primer: ProIndustrial Pro-Cryl Universal Primer

2 finish coats: ProIndustrial WB Alkyd Urethane Enamel, B53 series, semi-gloss

END OF SECTION 09.9100

SECTION 10.1400 – INTERIOR TACTILE SIGNAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Interior panel signs.

1.2 REFERENCES

- A. Department of Justice - Title II regulation (28CFR Part 35) and Title III regulation (28 CFR Part 36).
- B. ICC/ANSI A117.1 2003 Standard on Accessible and Useable Buildings and facilities or applicable standards of authorities having jurisdiction.
- C. ADA Accessibility Guidelines for Buildings and Facilities – ADAAG.

1.3 SUBMITTALS

- A. Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Manufacturers descriptive literature for each sign product specified including installation instructions.
- C. Shop Drawings: Elevation and plan drawings for each sign type showing: material, thickness, color, design, shape, size, edge, corner; text, Braille and/or pictogram layout, and components.
- D. Sample: Provide a sample of each sign product specified to verify compliance with the drawings and specifications.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store products in protective packaging until ready for installation.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- Basis-of Design Product: Subject to compliance with requirements, provide the following or a comparable product by one of the available manufacturers indicated:
 - Provide signs based on ASE, Inc. Product Series: IN 500 – Inlayed Acrylic: Architectural Signs & Engraving, (ASE, Inc.)
- Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be considered to be incorporated into the Work include, but are not limited to, the following:
 - Inpro Corp
 - Identity Group
 - Fast Signs
 - iSign

- Contractor must submit any product not specified a minimum ten (10) days before the bid date to Architect in order for product to be considered for approval. The Architect will notify Contractor in writing of decision to accept or reject request.
- Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 1 provisions.
 1. Include a list of three (3) projects of similar type and extent, located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Architect, Owner or Owner's Representative.
 2. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
 3. The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

2.2 MATERIALS

- Acrylic sheet: Cast methyl methacrylate monomer plastic sheet
 - 1. ASTM D790 minimum flexural strength – 16,000 psi.
 - 2. Maximum continuous temperature – 180 – 200 degrees F.
 - 3. Matte non-glare finish.
- Single ply modified acrylic plate.
 - 1. UV stable.
 - 2. Matte non-glare finish.
- Lexan: Polycarbonate resin thermoplastic
- FABRICATION
 - Signs shall comply with the regulations and standards referenced in 10440.1.2.
 - Acrylic sheet shall be CNC cut to specifications with square or radius corners, and/or custom shapes.
 - Identically sized 1/32 inch modified acrylic plate shall be adhered to the acrylic plate with a high bond chemical adhesive and the text and/or symbols shall be CNC cut to specifications. Text and/or symbols shall be removed from the sign face.
 - Corresponding text and/or symbols shall be CNC cut from 1/16 inch modified acrylic embedded 1/32 inch and chemically welded to the acrylic plate.
 - Domed grade 2 Braille shall be embedded in the surface.
 - Comply with requirements indicated for material, thickness, color, finish, design, shape, size and details of construction.
 - Text and symbols shall contrast with their background, i.e. light characters on a dark background or dark characters on a light background.

2.4 SIGNS

- Provide signs in accordance with Section 10440.3.4 (See sign schedule below and drawings.)
- Inlaid acrylic signs:

- Text and graphics color to be selected by Architect from manufacturers standard colors.
- Background color to be custom color as selected by Architect
- Sign size: Refer to Drawings.
- Text size: 5/8" raised 1/32 inch, with grade 2 Braille below text.
- Graphics: International symbols for indicated information.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that substrate has been properly prepared and that surfaces are cured.
- B. Notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Locate signs where indicated or directed by Architect. Install level and plumb in accordance with manufacturers recommendations.
- B. Locate in accordance with Section 10440.1.2.
- C. Wall Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply
 - Concealed screw mounting: Mount signs by inserting threaded studs into tapped lugs on back of signs. Set in a predrilled holes filled with quick-setting cement.

3.3 PROTECTION

Protect installed products until project completion. Clean signs according to manufacturers instruction.

3.4 SCHEDULES

- A. Room identification signage (Sign Type 01, Sign Type 05, Sign Type 06, Sign Type 07): Provide room identification signs for all rooms listed on the room finish schedules except for the following:
 - Vestibule
 - Corridors
 - Passage
- B. Directional Signage: Whether indicated or not, provide directional signage which indicates the route to the nearest like accessible element at the following locations:
 - Inaccessible building entrances
 - Inaccessible public toilets
 - Elevators not serving an accessible route

- C. Exit signage (Sign Type 02, Sign Type 04): Exits are to be marked by an exit sign.
- D. Occupant Load (Sign Type 03): Every room or space that is an assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place, near the main exit or exit access doorway from the room or space.

END OF SECTION

DIVISION 10 – SPECIALTIES
SECTION 10 14 00.0 – SIGNS

1.1 SCOPE OF WORK

The Contractor shall supply and install the proposed signs according to the specifications herein and located and installed according to the drawings. The contractor shall obtain final design sketches of all signage material from the sign manufacturer for approval by the Owners Representative.

2.1 MATERIALS

A. Handicap/van-accessible sign

- a. Handicap sign, post, and incidentals kit by Seton Cooperates. Phone 800-243-6624 (US only) Style No. L6459-RA, color based upon detail drawing, or approved equal.
- b. Van-accessible sign by Seton Cooperates. Phone 800-243-6624 (US only), Style No. L6085S01TEDRAE, color based upon detail drawing, or approved equal.
- c. Pennsylvania State specific ADA sign by Seton Cooperates. Phone 800-243-6624 (US only), Style No. 80680, color based upon detail drawing, or approved equal.
- d. PADOT standard type 'B' breakaway U-channel post, shop coated with black enamel.
- e. Galvanized fastening hardware
1. Quantity of signs and posts: 5

B. Temporary Construction Sign (One Sign)

- a. One (3/4") plywood sheet sign with posts and hardware conforming to these specifications and approved by the Owners Representative prior to installation. Plywood shall be one piece, 8' x 4', with EG Vinyl Overlay.
- b. pressure-treated pine 4x4 post
- c. 1/2" galvanized bolts as needed to mount sign securely to post.
- d. Font Size: Range from .71" to 1.75"
- e. Font Style: Times New Roman
- f. Orientation: Portrait
- g. Sides printed: 1
- h. Base Color: Pink
- i. Text Color: Dark Red
- j. Border: Yes/Dark Red
- k. Quantity: 1
- l. The background of each consultant's logo should be adjusted to match the designated pink color of the sign.

Future Home of Upper Pottsgrove Municipal Complex

Rendering Image to be provided by the Project Architect

Upper Pottsgrove Township
Montgomery County Pennsylvania



Design Consultants:



Alloy5 Architecture



Chester Valley Engineers



ProjectX Design Group



Slate Structural Engineers

Construction Manager:



Boyle Construction

Contractors:

C. Vehicular Stop Sign

- a. 2 lb steel channel post, shop coated with black enamel.
- b. R1-1 reflective aluminum sign. (PA manual on uniform traffic control devices: Regulatory Signs)
- c. Galvanized fastening hardware
- d. Quantity of signs and posts: 3

D. Police Access Sign

- a. 12"x18" Aluminum
- b. Standard, weather resistant painted coating with black background, white letters and 1/4" white outline surrounding the perimeter of the sign.
- c. Drilled Holes: 4 holes, one per corner, offset 1/2" from the sign corners
- d. Shape: rectangle with 1/4" rounded corners.
- e. Font: Aerial
- f. Font size: 1.5" minimum
- g. Quantity: 2
- h. Attached signs decorative and chain link fences using 9-gauge black vinyl coated fabric ties.

3.1 PROCUREMENT

The Contractor shall obtain above-described signs from approved shop drawings or catalog cuts and submit one for approval to the Owners Representative.

4.1 EXECUTION

- A. The Contractor shall supply and install completed construction signs prior to the start of any work. Sign shall conform to these specifications and drawings contained herein, and shall be installed accordingly. Sign shop drawings shall be submitted to the Owners Representative for approval.
- B. Refer to sign layout shown on the detail drawings for sign graphics content, font sizes and colors for the temporary construction sign. The Contractor shall be responsible to coordinate names and seals of the municipalities and design professionals with the Owners Representative so that the list is accurate. Posts shall be direct burial a minimum of two feet in the ground and so that the sign is rigid in the ground. The top height of the sign shall be 10 feet after installation.
- C. After all construction is completed on the project the Contractor shall remove and dispose of the temporary sign. Holes created by the posts shall be backfilled with topsoil and compacted. Seed areas damaged by sign installation and removal
- D. The location of all proposed signage shall be as shown on the plan drawings.

SECTION 101410 - PLAQUES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Metal plaques.
 - 2. Acrylic plaques.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For plaques.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show plaque mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements and layout for each plaque at least half size.
- C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of plaques that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.
- B. Regulatory Requirements: All signage shall be in accordance with all applicable government regulations and requirements.

2.2 MANUFACTURERS

- A. 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. Impact Signs, Inc.
 - 2. A.R.K. Ramos Architectural Signage Systems.
 - 3. Matthews Architectural Division.
 - 4. Bartush Signs.
 - 5. Fast Signs.

2.3 METAL PLAQUES

- A. Etched Plaque (PLAQUE TYPE 2): Chemically etched or photochemically engraved metal sheet or plate with texture, border, and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
 - 1. Plaque Material: Stainless-Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304 stretcher-leveled standard of flatness.
 - 2. Plaque Thickness: 1/4-inch.
 - 3. Finishes:
 - a. Integral Stainless-Steel Finish: As selected by Architect from full range of industry finishes with custom paint-filled color for recessed etched graphic.
 - b. Overcoat: Manufacturer's standard baked-on clear coating for exterior applications.
 - 4. Integral Edge Style: Plain bevel, brushed.
 - 5. Mounting: Stud mounted, concealed; hardware as provided by Manufacturer.
 - 6. Graphic: Custom graphic for fabrication provided by Manufacturer to match low resolution graphic provided by Architect.

2.4 PLASTIC PLAQUES

- A. Plastic Plaque (PLAQUE TYPE 1): Semi-translucent panel with digitally printed two-color logo on face with texture, border, and graphics having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
 - 1. Plaque Material: Engineered cast polymer acrylic sheet: ASTM D 635, ASTM D 1929, ASTM D 2843, ASTM E 84 Class A.
 - 2. Plaque Thickness: 1/4-inch.

3. Size: Custom 36" diameter or as indicated on the Drawings.
4. Finishes:
 - a. Backer: Vinyl, white.
 - b. Logo: UV ink printed directly onto plaque panel second surface.
5. Edge Style: Smooth polished, chamfer.
6. Mounting: Stud mounted with stainless steel standoffs, brushed finish, .79" barrel length, .98" cap diameter; hardware as provided by Manufacturer. Pre-drilled custom hole placement by manufacturer.
7. Graphic: Custom graphic for fabrication provided by Manufacturer to match low resolution graphic provided by Architect.

2.5 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of plaques, noncorrosive and compatible with each material joined, and complying with the following:
 1. Use concealed fasteners and anchors unless indicated to be exposed.
 2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
 3. Exposed Metal-Fastener Components, General:
 - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
 4. Plaque Mounting Fasteners:
 - a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of plaque, screwed into back of plaque, or screwed into tapped lugs cast integrally into back of plaque unless otherwise indicated.
 - b. Through Fasteners: Exposed metal fasteners matching plaque finish, with type of head indicated, installed in predrilled holes.
- B. Adhesive: As recommended by plaque manufacturer.
- C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.6 FABRICATION

- A. General: Provide manufacturer's standard plaques according to requirements indicated.
 1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.

4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match plaque finish.
 5. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.
- B. Surface-Engraved Graphics: Machine-engrave characters and other graphic devices into indicated plaque surface to produce precisely formed copy, incised to uniform depth.
1. Engraved Metal: Fill engraved graphics with manufacturer's standard baked enamel.
- C. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted plaques to suit plaque construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.
1. Stainless-Steel Brackets: Factory finish brackets to match plaque background finish unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install plaques using mounting methods indicated and according to manufacturer's written instructions.
1. Install plaques level, plumb, true to line, and at locations and heights indicated, with plaque surfaces free of distortion and other defects in appearance.
 2. Install plaques so they do not protrude or obstruct according to the accessibility standard.
 3. Before installation, verify that plaque surfaces are clean and free of materials or debris that would impair installation.
 4. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
 5. Location: Install the plaque as indicated on approved shop drawings or as indicated by Owner or Architect in field.
- B. Mounting Methods:
1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of plaque. Remove loose debris from hole and substrate surface.
 - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place plaque in position and push until flush to surface, embedding studs in holes. Temporarily support plaque in position until adhesive fully sets.
 - b. Thin or Hollow Surfaces: Place plaque in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

2. Through Fasteners: Drill holes in substrate using predrilled holes in plaque as template. Countersink holes in plaque if required. Place plaque in position and flush to surface. Install through fasteners and tighten.
 3. Brackets: Remove loose debris from substrate surface and install bracket supports in position, so that plaque is correctly located and aligned.
 4. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of plaque and of suitable quantity to support weight of plaque after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as plaque is applied and to prevent visibility of cured adhesive at plaque edges. Place plaque in position, and push to engage adhesive. Temporarily support plaque in position until adhesive fully sets.
- C. Remove temporary protective coverings and strippable films as plaques are installed.

END OF SECTION

SECTION 101419 – DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dimensional characters.
 - a. Cast dimensional characters.
 - b. Illuminated, fabricated channel dimensional characters.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, and layout for each sign at least quarter scale.
4. Show locations of electrical service connections.
5. Include diagrams for power, signal, and control wiring.

C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Signs and supporting elements shall withstand the effects of gravity and other loads within limits and under conditions indicated.
- B. Thermal Movements: For exterior cast and fabricated channel dimensional characters, allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 MANUFACTURERS

- A. 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. Impact Signs, Inc.
 - 2. A.R.K. Ramos Architectural Signage Systems.
 - 3. Matthews Architectural Division.
 - 4. Bartush Signs.
 - 5. Fast Signs.

2.3 DIMENSIONAL CHARACTERS

- A. Cast Characters (TYPE 1): Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:
 - 1. Character Material: Cast aluminum.
 - 2. Character Height: As indicated on Drawings.
 - 3. Finishes:
 - a. Integral Aluminum Finish: Clear anodized.
 - 4. Basis of Design: Cast Aluminum Letters in natural brushed finish by Impact Signs, Inc.
- B. Fabricated Channel Characters (TYPE 2): Metal face and side returns formed free from warp and distortion; with uniform faces, sharp corners, and precisely formed lines and profiles; internally braced for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners; and as follows.
 - 1. Illuminated Characters: Backlighting LED lighting, including transformers, insulators, and other accessories for operability, with provision for servicing and concealing connections to building electrical system. Use tight or sealed joint construction to prevent unintentional light leakage.

Space lamps apart from each other and away from character surfaces as needed to illuminate evenly.

- a. Power: As indicated on Electrical Drawings.
2. Character Material: Sheet or plate Stainless Steel.
3. Character Height: As indicated on Drawings.
4. Character Depth: 1 inch.
5. Finishes:
 - a. Stainless Steel finish: #4 Brushed
6. Mounting: Concealed, painted stainless steel back bar or bracket assembly.
 - a. Hold characters at manufacturer's recommended distance from wall surface.
7. Basis of Design: LED Halo Lit Fabricated Metal Channel Letters by Impact Signs, Inc.

2.4 DIMENSIONAL CHARACTER MATERIALS

- A. Aluminum Castings: Aluminum Alloy 5052 or as recommended by manufacturer in finish indicated.
- B. Stainless Steel Sheet: C316 Alloy as recommended by manufacturer in finish indicated and to prevent corrosion.

2.5 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
 1. Use concealed fasteners and anchors unless indicated to be exposed.
 2. For exterior exposure, furnish nonferrous-metal, stainless steel or hot-dip galvanized devices unless otherwise indicated.
 3. Exposed Metal-Fastener Components, General:
 - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
 4. Sign Mounting Fasteners:
 - a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
 - b. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, installed in predrilled holes.
- B. Adhesive: As recommended by sign manufacturer.
- C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.6 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 4. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
 - 5. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
 - 6. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.
- B. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.
 - 1. Stainless Steel Brackets: Factory finish brackets to match sign background finish unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION OF DIMENSIONAL CHARACTERS

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 - 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- B. Mounting Methods:
 - 1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
 - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.

- b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
 - 2. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
 - 3. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position, so that signage is correctly located and aligned.
 - 4. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
- C. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION

SECTION 102113 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Solid plastic toilet compartments including the following:

1. Floor mounted overhead-braced toilet compartments.
2. Privacy screens.

1.2 RELATED SECTIONS

A. Section 05 50 00 - Metal Fabrications.

B. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

A. ASTM A 666 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

B. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

C. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.

D. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.

B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.

C. Materials: Doors, panels and pilasters, constructed from high density polyethylene (HDPE) resins. Partitions to be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. Cover all plastic components with a protective plastic masking.

D. Performance Requirements:

1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with ASTM E 84:

- a. Class A flame spread/smoke developed rating.
- b. Class B flame spread/smoke developed rating.

2. Material Fire Ratings:

- a. National Fire Protection Association (NFPA) 286: Pass.
- b. International Code Council (ICC): Class B.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. Labor not included in warranty.

PART 2 – PRODUCTS

2.1 MANUFACTURER

A. Basis of Design: Reference Drawings Design Selection Summary on Sheet A1.80.

B. Alternates:

1. Bobrick Washroom Equipment, Inc.
2. Bradley Corporation; Mills Partitions.
3. Capitol Partitions, Inc.

2.2 MATERIAL

A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface.

B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.

C. Stainless Steel Castings: ASTM A167, Type 304.

D. Aluminum: ASTM 6463-T5 alloy.

2.2 SOLID PLASTIC TOILET COMPARTMENTS

A. Basis of Design: Hiny Hiders Toilet Partitions as manufactured by and supplied by Scranton Products.

1. Style: Floor mounted overhead-braced toilet compartments.

B. Doors, Panels, and Pilasters: 1 inch (25 mm) thick with all edges rounded to a radius. Mount doors and dividing panels based on height of specified system.

1. Door and Panel Height: 55 inches (1397 mm).
2. Aluminum heat sink fastened to bottom edges.
3. Door: Flat
4. Panel Edge: Standard.
5. Pilasters: 82 inches (2083 mm) high and fastened to floor.

C. Panel Color: Traditional Series.

1. Architect to select from Manufacturer's full range of colors.

D. Pilaster Shoes: 3 inches (76 mm) high type 304, 20 gauge stainless steel. Secured to pilasters with a stainless steel tamper resistant Torx head sex bolt.

E. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design. Finish to be clear anodized. Fastened to headrail brackets with stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.

1. Headrail Brackets: 20 gauge stainless steel with satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.

F. Wall Brackets:

1. Stainless Steel Brackets: Stainless steel type 304.
2. Brackets are fastened to pilasters with stainless steel tamper resistant Torx head screws and fastened to the panels with stainless steel tamper resistant Torx head sex bolts.
3. Bracket Type: Stirrup stainless steel double ear.
4. Bracket Type: Stirrup stainless steel single ear.

G. Door Hardware:

1. Continuous Aluminum Hinge:
 - a. Length: 54 inches (1372 mm).
2. Wrap-Around Hinges: 8 inches (203 mm) and fabricated from heavy-duty extruded aluminum. Hinges are through-bolted to pilasters and doors with stainless steel tamper resistant Torx head sex bolts. Hinges operate with field adjustable nylon cams. Cams can be field set in 30, 60 or 9 degree increments.
3. Door Strike/Keeper: Heavy-duty extruded aluminum 6436-T5 alloy with a bright dip anodized finish. Secured to pilasters with stainless steel tamper resistant Torx head sex bolts. Bumper shall be made of extruded black vinyl.
 - a. Style: 6 inches (152 mm) aluminum.
4. Aluminum Slide Bolt Latch and Housing: Heavy-duty extruded 6463-T5 alloy aluminum. Latch and housing to have a bright dip anodized finish. Slide bolt and button to have a black anodized finish.
5. Doors supplied with one coat hook/bumper and door pull made of chrome plated Zamak.
6. Equip outswing handicapped doors with second door pull and door stop.

2.3 SOLID PLASTIC PRIVACY SCREENS

A. Provide plastic privacy screens in urinal and entry toilet room applications as indicated or scheduled.

B. Panels, and pilasters, if required, 1 inch (25 mm) thick with edges rounded to a radius. Screens to be mounted at 14 inches (356 mm) above the finished floor. Color as selected by Architect from manufacturer's full line of current colors.

1. Aluminum heat sink fastened to bottom edges.

C. Screen Type: Wall mounted.

1. Urinal Screens: 24 inches (610 mm) wide by 42 inches (1067 mm) high.

D. Wall Brackets: Extruded PVC plastic. Fastened to the panel/pilaster with stainless steel tamper resistant torx head screws and fastened to wall with stainless steel tamper resistant torx head sex bolts.

1. Length of Wall Brackets: 41 inches (1041 mm).
2. Bracket Color: Grey.

E. Aluminum Slide Bolt Latch and Housing: Heavy-duty extruded 6463-T5 alloy aluminum. Latch and housing to have a bright dip anodized finish. Slide bolt and button to have a black anodized finish.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install partitions rigid, straight, plumb, and level manor, with plastic laid out as shown on shop drawings.
- C. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5mm).
- D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- E. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 102600 - WALL PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wall sheet protection.
 - 2. Impact-resistant handrails.
 - 3. Corner guards.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of wall protection showing locations and extent.
 - 1. Include plans, elevations, sections, and attachment details with appropriate adhesives for specific project substrates.
- C. Samples: For each exposed product and for each color and texture specified, 8" long for linear products and 8" square for panel products.

1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Material certificates.
- C. Sample warranty.
- D. Manufacturer's Installation Instructions.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened factory packaging to the jobsite.
- B. Inspect materials at delivery to ensure that specified products have been received.

- C. Store in original packaging in climate-controlled location away from direct sunlight.

1.6 WARRANTY

- A. Standard Warranty: Manufacturer agrees to provide lifetime warranty against material and manufacturing defects.
- B. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-protection units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1.
- C. Impact Strength: Provide materials that have been tested in accordance with the applicable provisions of ASTM D 256, Impact Resistance of Plastics.
- D. Chemical and Stain Resistance: Provide material that shows resistance to stain when tested in accordance with applicable provisions of ASTM D-543.
- E. Fungal and Bacterial Resistance: Provide material that does not support fungal or bacterial growth as tested in accordance with ASTM G-21 and ASTM G-22.
- F. Color Consistency: Provide components matched in accordance with SAE J-1545 - (Delta E) with a color difference no greater than 1.5 units using CIE Lab, CIE CMC, CIE LCh, Hunter Lab or similar color space scale systems.

2.2 MANUFACTURERS

- A. Source Limitations: Obtain wall protection products of each type from single source from single manufacturer.

- B. Manufacturers: Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. InPro Corporation.
 - 2. Construction Specialties, Inc.
 - 3. Activar Construction Products Group, Inc.

2.3 WALL PROTECTION (WP-01)

- A. Abuse Resistant Sheet Wall Protection: Heavy-duty, PVC-free sheet designed to withstand impacts.
 - 1. Basis of Design: Palladium G2 Sheet IPC Door and Wall Protection Systems by InPro Corporation.
 - 2. Sheet Size: 48 x 96 inches per sheet.
 - 3. Sheet Thickness: 0.040-inch.
 - 4. Trim and Joint Moldings: Extruded rigid non-PVC that matches sheet color. Furnish and install all accessories as required and recommended by manufacturer for complete installation including but not limited to the following:
 - a. Top Cap: 8' L
 - b. Vertical Divider Bar: 8' L
 - c. Inside Corner: 8' L
 - d. Outside Corner: 8' L
 - 5. Mounting: Adhesive as recommended by Manufacturer for substrate.
 - 6. Color: Refer to Design Selection Summary on Sheet A1.80 or as selected by Architect from Manufacturer's full range of color, faux wood, or metallic colors.
 - 7. Finish: Smooth Velvet Texture.

2.4 MATERIALS

- A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required, thickness as indicated.
- B. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- C. Adhesive: As recommended by protection product manufacturer.

2.5 FABRICATION

- A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.
- B. Quality: Fabricate components with uniformly tight seams and joints and with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

2.6 FINISHES

- A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of the Work.
- B. Examine walls to which wall and door protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
 - 1. For wall and door protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Complete finishing operations, including painting, before installing wall and door protection.
- B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

- A. Project Conditions: Products must be installed in an interior climate controlled environment.
- B. Installation Quality: Install wall protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
- C. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.
- D. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.

1. Provide anchoring devices and suitable locations to withstand imposed loads.
 2. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches apart.
 3. Adjust end and top caps as required to ensure tight seams.
- E. Abuse-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.

3.4 CLEANING

- A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.
- B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION

SECTION 102641 - BULLET RESISTANT PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Bullet resistant fiberglass panels of the following ballistic rating level:
 - 1. Level 3.

1.2 RELATED SECTIONS

- A. Section 09 21 16.23 - Gypsum Board Shaft Wall Assemblies.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM E 1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation.
- B. International Organization for Standardization (ISO):
 - 1. ISO 9001-2008 - Quality Management System.
- C. National Institute of Justice Ballistic Standards (NIJ):
 - 1. NIJ Standard 0108.01.
- D. Small Business Administration (SBA):
 - 1. SBA Small Business Size Standard.
- E. Underwriters Laboratories (UL):
 - 1. UL 752 Specifications and Ammunition, 11th Edition, Standard for Bullet Resisting Equipment published September 9, 2005, revised December 21, 2006.
- F. The United States Department of State:
 - 1. The International Traffic in Arms Regulations (ITAR).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Details of installation of bullet resistant fiberglass panels.
- D. Certificates: Submit printed data to indicate compliance with following requirements.
 - 1. UL Listing Verification and UL752 Current Test Results as provided by Underwriters Laboratories.
 - 2. ASTM E 119.
 - 3. ASTM F 1233.

- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Sourcing: Panels manufactured in the United States of America with raw materials sourced from the U.S.A. for quality assurance purposes and to comply with any applicable "Buy American" provisions.
- B. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.
- C. Installer Qualifications: Minimum 2 year experience installing similar products.

1.6 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to starting work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Deliver materials to project with manufacturer's UL Listed labels intact and legible.
- C. Handle material with care to prevent damage. Store materials inside under cover, stack flat and off the floor.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

- A. Provide manufacturer's standard limited warranty for materials and workmanship against defects for a period of ten years from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Manufacturer: ArmorCore by Waco Composites, which is located at: P. O. Box 20008; Waco, TX 76702-0008; Toll Free Tel: 866-688-3088; Tel: 254-752-3622; Fax: 254-752-3634; Email: [request info \(sales@armorcore.com\)](mailto:request info (sales@armorcore.com)); Web: www.armorcore.com
- B. Acceptable Manufacturers: Subject to the requirements and compliance of the specifications provide form one of the following manufacturers:

1. Armortex: 1-800-880-8306 www.armortex.com
 2. ArmorCo : (440) 992-2331, www.armorco.com
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 BULLET RESISTANT PANELS

- A. General:
1. Bullet Resistant Fiberglass Panels shall be "non-ricochet type" to permit the encapture and retention of an attacking projectile lessening the potential of a random injury or lateral penetration.
 2. Bullet resistance of joints: Equal to that of the panel.
- B. Product: Panels shall be fabricated of multiple layers of woven roving ballistic grade fiberglass cloth impregnated with a thermoset polyester resin and compressed into flat rigid sheets as manufactured by Waco Composites.
- C. Panel Product: ArmorCore Level 3.
1. Panel Rating: UL752 Level 3.
 2. Armor Type: NIJ Standard 0108.01 - Type IIIa.
 3. Physical Characteristics: 7/16 inch (11.1 mm) thick, 4.8 lbs. per sq.ft. (23.4 kg per sq. m).
 4. Panel Size: Maximum size required to limit number of seams.
 - a. Refer to drawings for indicated locations to determine required panel size

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Prior to starting installation, verify work of related trades required in contract documents and architectural drawings is complete to the point where work of this Section may properly commence.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.
- B. Reinforce joints with a back-up layer of bullet resistive material. Minimum width of reinforcing layer at joint shall be 4 inches (102 mm), centered on panel joints.

- C. Install panels in accordance with manufacturer's printed recommendations and as required by contract documents.
- D. Secure armor panels using screws, bolts, or an industrial adhesive.
- E. Method of application shall install panels minimizing vulnerabilities by fitting tightly to adjacent surfaces including concrete floor slab, concrete roof slab, bullet resistive door frames, bullet resistive window frames, and other assemblies.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 102813 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Toilet accessories.
- B. Related Requirements:
 - 1. Section 088300 "Mirrors" for frameless mirrors.

1.2 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Include electrical characteristics.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.
 - 2. Identify accessories using designations indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For accessories to include in maintenance manuals.

1.6 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.7 WARRANTY

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, visible silver spoilage defects.
 - 2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Structural Performance: Design accessories and fasteners to comply with the following requirements:
 - 1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.
 - 2. Shower Seats: Installed units are able to resist 250 lbf applied in any direction and at any point.

2.2 TOILET ACCESSORIES

- A. Source Limitations: Obtain toilet accessories from single source from single manufacturer unless otherwise approved by Architect.
- B. Basis of Design Products: The design for accessories is based on products indicated on the Toilet Accessories Schedule on the Drawings. Subject to compliance with requirements, provide the named product by Bobrick Washroom Equipment, Inc. or a comparable product by one of the following:
 - 1. American Specialties, Inc. (ASI).

2. Bradley Corporation.

- C. Toilet Accessories Schedule: Provide toilet accessories where shown on Drawings or as provide in these specifications. Provide products of the same manufacturer for each type of accessory unit and for units exposed in the same area.
1. Toilet accessories shall be of the quality as manufactured by Bobrick. The accessories which are indicated on the Drawings are listed with Bobrick catalog numbers for convenience in identifications only. The use of a catalog numbers as a description of an item shall be taken to include the description or specification for the item in the manufacturer's catalog.

2.3 MATERIALS

- A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch- minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B19, flat products; ASTM B16/B16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B30, castings.
- C. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.036-inch- minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A653/A653M, with G60 hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A153/A153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.
- G. Chrome Plating: ASTM B456, Service Condition Number SC 2 (moderate service).
- H. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.4 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories in accordance with manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
 - 1. Remove temporary labels and protective coatings.
- B. Grab Bars: Install to comply with specified structural-performance requirements.
- C. Shower Seats: Install to comply with specified structural-performance requirements.
- D. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Clean and polish exposed surfaces in accordance with manufacturer's written instructions.

END OF SECTION

SECTION 104400 - FIRE PROTECTION SPECIALTIES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Section includes portable, hand-carried, fire extinguishers, and mounting brackets for fire extinguishers.
2. Section includes fire protection cabinets for the following:
 - a. Portable fire extinguishers.
 - b. Fire Protection Cabinets

B. Related Sections:

1. Division 10 Section "Signage" for directional signage to out-of-sight fire extinguishers and cabinets.
2. Division 26 Sections or the Drawings for low-voltage wiring for fire protection cabinet alarms.
3. Division 26 Section "Interior Lighting" or the Drawings for fire extinguisher location lights.

1.2 SUBMITTALS

A. Product Data:

1. Fire Extinguishers: For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
2. Fire Protection Cabinets: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets. Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Product Schedule: For fire extinguishers and fire protection cabinets.

1. Coordinate final fire extinguisher schedule with fire protection cabinet schedule to ensure proper fit and function.
2. Coordinate final fire protection cabinet schedule with fire extinguisher schedule to ensure proper fit and function

C. Operation and Maintenance Data: For fire extinguishers and fire protection cabinets to include in maintenance manuals.

D. Shop Drawings: For fire protection cabinets. Include plans, elevations, sections, details, and attachments other work.

E. Warranty: Sample of special warranty.

1.3 QUALITY ASSURANCE

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FMG.

C. Fire-Rated, Fire Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.4 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

B. Coordinate size of fire protection cabinets to ensure that type and capacity of fire hoses, hose valves, and hose racks indicated are accommodated

C. Coordinate sizes and locations of fire protection cabinets with wall depths.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
2. Warranty Period: Six years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 PORTABLE FIRE EXTINGUISHERS

- A. Multi-purpose dry chemical type UL 299 fire extinguishers, 4A:60B:C UL rating:
- Larsen's Manufacturing Company, Model "MP10".
 - Potter Roemer, Model Number 3010.

- Or alternative of the quality necessary to meet the specifications.

- B. Where indicated on the Drawings, and at each fire extinguisher cabinet, provide one multi-purpose dry chemical fire extinguisher with UL rating.
- C. Provide manufacturer's standard wall mounting brackets for all portable fire extinguishers except those furnished in cabinets.
- D. Service, charge, and tag each fire extinguisher not more than five calendar days prior to the Date of Substantial Completion of the Work as that Date is established by the Architect.

2.2 FIRE PROTECTION CABINET (FEC) (3 TYPES) RECESSED, SEMI-RECESSED, SURFACE-MOUNT

- A. Cabinet Type: Suitable for fire extinguisher.

1. Basis of Design Cabinet Type: The following cabinet(s) are listed with a specific manufacturer's catalog number for convenience in identification only. The use of a catalog number as a description of the cabinet shall be taken to include the specification for the item. Equal products from the available manufacturers listed in this section will be acceptable.

- a. Larsen's "Cameo Series #C2409" or "Cameo Series #FSC2409" in all fire-rated walls.
- b. J. L. Industries' "Clear VU Series" or "Clear VU Series FX2" in all fire-rated walls.
- c. Cabinet bubble projection cannot exceed 4 inches from finished wall face.

2. Available Manufacturers: Subject to compliance with requirements, manufacturers whose products may be considered to be included in the Work, include:

- a. J. L. Industries, Inc.; a division of Activar Construction Products Group.
- b. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
- c. Larsen's Manufacturing Company.
- d. Modern Metal Products, Division of Technico, Inc.
- e. Potter Roemer LLC.

B. Cabinet Construction: Manufacturer's standard enameled steel box, with trim, frame, door and hardware to suit cabinet type, trim style, and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.

- C. Fire-rated Cabinet Construction:

1. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- (1.1-mm-) thick, cold-rolled steel sheet lined with minimum 5/8-inch- (16-mm-) thick, fire-barrier material. Provide factory-drilled mounting holes.

- D. Cabinet Material:

1. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

2. Acrylic Bubble: One piece.

E. Fully Recessed Cabinet: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated.

1. Trimless with Concealed Flange: Surface of surrounding wall finishes flush with exterior finished surface of cabinet frame and door, without overlapping trim attached to cabinet. Provide recessed flange, of same material as box, attached to box to act as drywall bead.
2. Trimless with Hidden Flange: Flange of same metal and finish as box overlaps surrounding wall finish and is concealed from view by an overlapping door.
3. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

Cabinet Trim Material: Steel sheet.

F. Semi-Recessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

1. Square-Edge Trim: 1-1/4 to 1-1/2 inch backbend depth.
2. Rolled-Edge Trim: 2-1/2" backbend depth.

G. Surface Mount Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.

H. Door Material: Steel sheet.

I. Door Style: JL Indust. "Clear VU Series, or Larsen's "Cameo Series (Full bubble with frame).

J. Door Glazing: Molded acrylic bubble.

1. Acrylic Bubble Color: Clear, transparent.

K. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide projecting lever handle with cam-action latch or recessed door pull and friction latch.
2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

L. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish..
2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER."

- 1) Location: Applied to cabinet door.
- 2) Application Process: Silk-screened.
- 3) Lettering Color: As selected by Architect.
- 4) Orientation: Vertical.

M. Finishes:

1. Manufacturer's standard baked-enamel paint for the following:
 - a. Exterior of cabinet, door, and trim except for those surfaces indicated to receive another finish.
 - b. Interior of cabinet and door.
2. Steel: Baked enamel or powder coat.

2.2 FABRICATION

A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Provide factory-drilled mounting holes.
3. Prepare doors and frames to receive locks.
4. Install door locks at factory.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13mm) thick.
2. Fabricate door frames of one-piece construction with edges flanged.
3. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.3 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire protection cabinets after assembly.

D. 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.

2.4 FIRE PROTECTION CABINET STEEL FINISHES

A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with. After cleaning, apply a conversion coating suited to the organic coating to be applied over it.

B. Factory Prime Finish: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

C. Baked-Enamel or Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.

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

C. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

2. Proceed with installation of fire extinguishers only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for recessed fire protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION OF FIRE PROTECTION CABINETS

A. General: Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

END OF SECTION

SECTION 105113 - METAL LOCKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Welded turnout gear lockers w/ integral bench.
 - 2. Welded turnout gear lockers – ADA type.
 - 3. Standard and Refrigerated Pass-Thru and Non-Pass-Through Evidence Storage Lockers.
 - 4. Weapons Storage Lockers.
 - 5. Go-Bag Storage Shelving.
- B. Related Requirements:
 - 1. Section 061000 – Rough Carpentry: In-wall framing and blocking for support of items scheduled.
 - 2. Division 26 “Electrical” Sections with applicable electrical requirements.

1.2 REFERENCES

- A. American National Standards Institute (ANSI) Standards:
 - 1. Applicable standards for fasteners used for assembly.
- B. American Society for Testing and Materials (ASTM) Standards:
 - 1. Applicable standards for steel sheet materials used for fabrication.
 - 2. Applicable standards for the testing of electrostatically applied Powder Coat Paint
- C. American Institute Of Steel Construction (AISC) Standards:
 - 1. Applicable standards for steel materials used for fabrication.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Submit manufacturer's product literature and installation instructions. Include data substantiating that products to be furnished comply with requirements of the contract documents.
- B. Shop Drawings: Show fabrication, assembly, and installation details including descriptions of procedures and diagrams. Show complete extent of evidence lockers installation layout including quantities, locations and types of accessory units required. Include notations and descriptions of all installation items and components.

1. Include plans, elevations, sections, and attachment details.
 2. Show locker or shelving trim and accessories.
 3. Where applicable, include locker identification system and numbering sequence.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of standard, non-standard, and metallic colors available.
- D. Samples for Verification: Provide 3-inch minimum square sample of each color and texture on actual substrate for each component to remain exposed after installation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.6 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. The following metal locker hardware items equal to 10 percent of amount installed for each type and finish installed, but no fewer than three units:
 - a. Locks.
 - b. Blank identification plates.
 - c. Hooks.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.
- B. Deliver master and control keys to Owner by registered mail or overnight package service.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication. Indicate verified measurements on Shop Drawings. Coordinate fabrication and delivery to ensure no delay in progress of the Work.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.10 WARRANTY

- A. Warranty: Provide a written warranty executed by Contractor, Installer and Manufacturer, agreeing to repair or replace units which fail in materials or workmanship within the established warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have under the General Conditions provisions of the Contract Documents.
- B. Limited Lifetime Warranty: Subject to the terms in the written warranty, warrant the original purchaser exclusively that the locker frames manufactured by it will be free from defects in materials and workmanship for the lifetime of the locker. Warrant the original purchaser exclusively that all moving parts manufactured by it will be free from defects in materials and workmanship for 5 years.
- C. Warrants that all refrigeration units shall be free from defects in materials and workmanship for one (1) year from the date of the customer's written acceptance of installation. During the 1-year warranty period, all parts are included at no cost for 1 year. Labor is included at no cost during the first year of the 1-year warranty period. After the first year of the 1-year warranty, all labor will be charged at the current rate.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of metal lockers and accessories from single source from single locker manufacturer.

- 1. Obtain locks from single lock manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: For lockers indicated to be accessible, comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.3 WELDED GEAR LOCKER WITH INTEGRAL BENCH (EQ-14)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Spacesaver Corporation.
 2. DATUM Storage Systems.
 3. Hallowell, A division of List Industries, Inc.
 4. Penco Products.
- B. Welded Frame:
1. The welded frame must consist of top, bottom, back, and sides constructed of a minimum of 18-gauge or 1.214 millimeters steel. All frame components shall be joined using resistance welding. Riveting of structural members will not be permitted.
 2. Horizontal front flanges will be a minimum of 2 inches or 50.8 millimeters. Vertical front flanges will be a minimum of 1 inch or 25.4 millimeters. Horizontal and vertical flanges will overlap and be secured with a minimum two (2) resistance welds per corner.
 3. Corner gussets shall be MIG and spot welded in each of the four front corners of the locker for increased stiffness and rigidity.
 4. Provide side panel lances evenly spaced on 3 inch or 76.2 millimeter centers. Lances to provide the flexibility of on-site, end-user reconfiguration/addition of internal components anytime, anywhere, now or in the future.
 5. Bench Housing for built-in bench drawer
 - a. Welded frame construction shall consist of top, bottom, and side components joined by using resistance welding. Riveting of bench housing structural members will not be permitted.
 - b. Corner gussets shall be welded in the two (2) front bottom corners of the bench housing for increased stiffness and rigidity.
 - c. Horizontal front flanges will be a minimum of 1 inch or 25.4 millimeters
 - d. Vertical front flanges will be a minimum of 1 inch or 25.4 millimeters
 - e. Horizontal and Vertical front flanges will overlap and shall be secured with minimum of one (1) resistance weld per corner.
 - f. Side panels – Lances symmetric and evenly spaced to provide optimum component locations (standard based on 3 inch or 76.2 millimeter on center vertical placement to match mating locker lance design).
 - g. Return flanges on housing to securely fasten housing to welded frame of locker.
 - h. Base of bench housing shall include four (4) 3/8"-16 UNC threaded weld-nuts and corresponding leveling feet.
 - i. Top of bench housing shall include hole pattern for mating bench seat.
 - j. Sides of bench housing shall include mounting holes in the event lockers are ganged together.
 6. Lockers with built-in bench drawer and built-in external access drawer shall have intermediate base shelf with interlocking mechanism for securing drawer when locker door is closed.
 7. Provide four (4) 0.875 inch or 22.23 millimeter diameter electrical knock-outs per locker, two (2) located on top of the locker in both right and left rear corners. Knock-outs allow end-user flexibility of adding electrical capability to lockers.
 8. Provide a minimum of four (4) duplex receptacle electrical knock-outs per locker; to be used with a UL listed manufactured electrical wiring system as required. This manufactured electrical

wiring system is a simple, unique, flexible, and cost effective method of providing electrical capability to the lockers. This electrical system can be added in the future.

- a. Top of the locker shall have four (4) duplex electrical knock-outs.
 - b. Top of locker shall have electrical duplex receptacle knock-outs located on both right and left side of locker.
9. Provide ventilation holes in top of locker to allow mechanically extracted air to be pulled up through the locker system as required. Ventilation shall be controlled by eight (8) evenly spaced 0.625 inch or 15.875 millimeter diameter holes. Proper ventilation system ensures unpleasant odors are removed from locker system.
 10. Lockers shall be prepared with mounting holes for use with the continuous sloped top system.
 11. Lockers shall be prepared with mounting holes for attaching necessary trim components
 12. Locker shall be prepared with mounting holes for ganging lockers back-to-back or side-by-side
 13. Base of lockers shall include four (4) 3/8"-16 UNC threaded weld-nuts and corresponding leveling feet.
 14. Base shelf for lockers with built-in external access drawers and bench drawers shall have holes to accommodate double-door lock rod and door stop bracket. (only on 24 inch or 609.6 millimeters wide and larger)
 15. End Panels: End Panels with no exposed fasteners shall be provided on the end of each locker run; thus providing a clean and aesthetically pleasing appearance.

C. Ventilation:

1. Provide ventilation holes in top of locker to allow mechanically extracted air to be pulled up through the locker system as required. Ventilation shall be controlled by eight (8) evenly spaced 0.625 inch or 15.875 millimeter diameter holes. Proper ventilation system ensures odors are removed from locker system.
2. Provide an adjustable air baffle for system balancing when mechanical air extraction is used. Upon balancing system, air baffle shall be secured with a fastener to maintain ventilation setting.
3. Provide louvered air vents in bottom of the main locker door/s to allow mechanically extracted air to be pulled up through the locker system.
4. Provide louvered air vents in drawer front when built-in bench drawer or built-in external access drawer models are required.
5. Minimum 0.500 inch or 12.7 millimeter gap between back of shelving components and back of locker to provide uninterrupted air flow up the rear of the locker system.
6. Minimum 2.00 inches or 558.8 millimeter gap between front of shelving and locker door to provide uninterrupted air flow up the front of the locker system.
7. Multi-Tier ventilation is provided thru door panels
8. Upon request manufacturer shall provide HVAC tech data to serve as a guideline for the General Contractor and HVAC Contactor. It is the General Contractor and/or HVAC contractors' responsibility to establish/balance air flow through locker system according to building HVAC constraints.

D. Drawers (for bench drawer):

1. Drawer body wrapper shall have welded frame construction. Riveting of structural members will not be permitted.
2. Drawers for locker with built-in bench drawers and built-in external access drawers shall have box-formed drawer front.

3. Provide interlock system for securing drawer when main locker doors are closed and provide access only when main locker door/s is opened. Cable drawer release mechanism will not be accepted.
 4. Built-in bench drawer shall have a nominal 36 inches or 914.4 millimeters depth.
 5. Provide a flush mounted pull handle.
 6. Drawer Slides: Provide 200 lbs or 90.72 kilograms maximum load capacity and pass 50,000 cycle performance testing (Max. load, uniform distribution) (Test data to be provided by manufacturer upon request)
 7. Drawer base minimum 21 inches 533.4 millimeter drawer extension
 8. Bench drawer minimum 26.5 inches 673.1 millimeter drawer extension
 9. Provide louvered air vents in drawer front when built-in bench drawer or built-in external access drawer models are required.
 10. Provide capability of attaching glides for Body Armored Drying Rack, as requested.
- E. Bench Seat:
1. Provide 13.0 inches deep laminated kiln dried maple bench seat; material thickness 1.25 inches or 31.8 millimeters.
 2. Front (leading edge) of bench seat to have .625 inch or 15.88 millimeter radius bull nose.
 3. Finish of bench seat shall be sanded smooth and have two (2) coats of catalyzed varnish applied.
- F. Single-Piece Welded Doors (Single and Double Door Models):
1. Shall be formed from two (2) pieces of minimum 18-gauge 1.2 millimeter cold rolled steel box formed and welded together using modern GMAW techniques. Single-piece door with inner and outer door panels shall have a combined steel thickness of no less than 0.096 inches or 2.4 millimeters thick. Welded door design with inner panel optimizes structural integrity of locker door system over and above any single frame door design.
 2. Exterior door panel shall be constructed with formed flanges and return flanges to add stiffness.
 3. Internal door panel shall be constructed with formed flanges for added stiffness.
 4. All inner door panel heights shall be minimum 70% of external door height.
 5. Single-piece welded door frame shall consist of internal door panel nested inside exterior door panel and welded per the following requirements:
 - a. Top / bottom. Exterior and interior panels to be welded in a minimum of three (3) places with weld spacing not to exceed 6 inches or 152.4 millimeters between adjacent welds and 1 inch or 25.4 millimeters from any corner.
 - b. Sides. Exterior and interior panels to be welded with spacing not to exceed 12 inches or 304.8 millimeters between adjacent welds and 1 inch or 25.4 millimeters from any corner.
 6. Inner door panel to have peg board style hole pattern, allowing the attachment of Document Holder and any standard peg board accessory.
 7. Inner door panel to have 4 inch or 101.6 millimeter rectangular slot centered towards the top of the locker.
 8. External door panel shall have louvers to provide adequate air circulation throughout locker system.
 - a. Louvered air vents shall be located at the bottom of the locker door to enhance circulation of mechanically extracted air from the bottom of the locker out of the top.
 - b. Louvered air vents shall be approximately 3 inches or 76.2 millimeters in width and 0.75 inches or 19.05 millimeters in height and spaced on 1 inch or 25.4 millimeter centers.

9. All doors shall have neoprene silencers on each door for noise reduction
 10. Door torsional deflection shall not exceed 0.1875 inch or 4.76 millimeter with a 20 lb or 9.071 kilogram point load. (Test data to be provided by manufacturer upon request)
 11. Hinge:
 - a. Provide 16-gauge full length hinge for increased strength and security of locker system.
 - b. Hinges to be welded to door frame with spot welds not to exceed 6 inch or 152.4 millimeter separation.
 12. Door assembly to be riveted to door frame on factory pre-established hole pattern.
 13. Locking Mechanism.
 - a. Provide three locking options (all locking options have protective stainless steel cover plate for durability and scratch resistance):
 - 1) Hasp lock only.
- G. Interior Accessory components:
1. All interior components must be constructed of minimum 18-gauge or 1.214 millimeter steel (unless otherwise clarified in specification).
 2. For added security, internal component shall be secured utilizing blind rivets, threaded fasteners, or bending specially designed tab.
 3. Shelves (available all locker models)
 - a. Shelf with integral hanger bracket
 - 1) Size specified by locker width
 - 2) Hanger bracket designed with perforations on approximately 3 inch or 76.2 millimeter centers to insure clothing separation for optimum ventilation
 - 3) Performance: Uniform load rating 300 lbs or 136.08 kilograms
 4. Bracket: 3-hook bracket.
 5. Internal lock box.
 6. Boot Tray
 - a. Material – Rubber
 - b. Dimensions:
 - 1) Width – 12.90 inches or 327.7 millimeters
 - 2) Depth – 19.90 inches or 505.5 millimeters
 - 3) Height – 1.25 inches or 34.75 millimeters
 - c. Manufactured from Natural rubber compounds, environmentally friendly, durable, water repellant easily cleaned with soap and water, resistant to alkalis and weak acids, mold, mildew, and dust mites.
- H. Locker Tag Numbers
1. Shall provide locker numbers on each locker.
- I. ACCESSORIES:
1. Trim and Fillers: Provide manufacturer's standard.
- J. Materials:
1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
 2. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with A60 zinc-iron, alloy (galvannealed) coating designation.

- K. Finish: Baked enamel or powder coat.
 - 1. Color: As selected by Architect from manufacturer's full range of standard and non-standard colors.
- L. Basis of Design: As indicated on Equipment Schedule on Drawings.
 - 1. EQ-14 Locker with pull-out bench drawer:
 - a. Size: 24-inch wide, 24-inch deep, 36-inch deep with integral bench, 84-inch height.
 - b. 8" high sloped top
 - c. Upper Shelf w/ integrated hanging bar
 - d. Internal lock box with hasp lock mechanism
 - e. 3-hook bracket
 - f. Pull-out bench drawer 36" D x 20" H
 - g. Removable Rubber Boot Tray
 - 2. EQ-15 ADA Compliant Locker:
 - a. Size: 24-inch wide, 24-inch deep, 84-inch height.
 - b. 8" high sloped top
 - c. Upper Shelf w/ integrated hanging bar (installed within ADA reach range)
 - d. 3-hook bracket (installed within ADA reach range)
 - e. Internal lock box with hasp lock mechanism
 - f. Removable Rubber Boot Tray
 - 3. EQ-15A Locker with Double Door:
 - a. Size: 42-inch wide, 24-inch deep, 84-inch height.
 - b. Upper Shelf w/ integrated hanging bar
 - c. Hanger Bar assembly kit
 - d. (2) full width adjustable shelves; heavy duty capacity

2.4 EVIDENCE STORAGE LOCKERS (EQ-3A, EQ-3B, EQ-4, EQ-5, EQ-6)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Spacesaver Corporation.
 - 2. Steele Solutions.
 - 3. Southwest Solutions Group.
 - 4. DATUM Storage Systems.
 - 5. Fasco Security Products, Inc.
- B. Size: As indicated on Equipment Schedule on Drawings.
- C. Configuration: Final configuration to be identified by Architect based on submitted product data from all available configurations.
- D. Welded Frame:
 - 1. The welded frame is structural and shall consist of top, bottom, back and sides constructed of a minimum of 18 gage (1.21MM) steel. All frame components shall be joined using resistance welding. Riveting or bolting of structural members will not be permitted.
 - 2. Horizontal and vertical outer front flanges will be a minimum of 1.5 inches (38MM). Horizontal and vertical flanges will overlap with a minimum of 2 resistance welds per corner.

3. Center vertical lock housing is structural and will run the full height and depth of the locker. All locks will be completely enclosed by a full height removable panel. Pass-thru rear release mechanisms will be completely enclosed by the lock housing and accessible only when the rear door is open. Provide engagement points for the anti-pry tabs that are on all front doors.
 4. Exposed lock mechanisms that can snag evidence and be obstructed by stored articles will not be permitted.
- E. Welded Bases:
1. Each welded base shall be permanently affixed to each locker using modern Inert Gas Metal Arc Welding techniques for lateral unit stability. The base shall be a minimum of 14 gage (1.98MM) steel 4 inches (101MM) high with a 1.5 inch (38MM) return on the bottom for support.
 2. Provide four 0.375 inch (9.5MM) mounting holes and four 0.375 inch (9.5MM) nuts welded in place for the mounting of floor levelers. Provide four appliance levelers per locker.
 3. Provide removable access panels for access to mounting holes and leveling points.
- F. Shelves:
1. Shall be a single-piece formed from a minimum of 18-gage (1.21MM) cold rolled steel with a double 90-degree bend on the rear of the shelf and a double 90-degree bend on the front of the shelf. Shelf sides shall be turned up 90-degrees for ease of cleaning and to prevent debris from becoming caught between the shelf and the sidewall.
 2. All shelves shall be welded into place. Rivets, screws, bolts or other loose fasteners will not be permitted for the fastening of shelves to the locker frame.
- G. Locks:
1. Patent Pending. Lock shall be push button locking with a stainless steel push button and alignment bezel. Locks shall be a one-piece removable design. Locks will secure the door with the single push of a button with no other action required by the user.
 2. Locks will be deadbolt type locks with multi-point engagement. Rotary latches or cam locks will not be tolerated.
 3. Pass-thru locks will be reset from the rear of the locker when the rear door is in the open position only. Cable reset mechanism not acceptable.
 4. Provide documentation for cycle testing where locks are tested successfully to a minimum 40,000 cycles without failure.
 5. Locks shall be pre-lubricated with no maintenance required for the lifetime of the unit (estimated at 20 years).
- H. One Piece Welded Doors:
1. Shall be formed from two pieces of minimum 18-gauge (1.2MM) cold rolled steel box formed and welded together using modern GMAW techniques. The one piece door with inner and outer door skins shall have a combined steel thickness of no less than 0.096 inches thick.
 2. Each door shall have a nickel plated, flush mounted door handle installed with fasteners visible only in the unlocked position.
 3. Provide neoprene silencers on each door.
 4. Provide anti-pry tabs that engage with the Center Vertical Lock Housing when the door is locked.
 5. Doors shall have no moving parts except the door and the hinge.

6. Provide stainless steel spring loaded hinges that are welded to prevent pin removal. Spring loaded hinges shall be capable of holding the door closed and flush with the door frame. Doors that hang ajar are a safety concern and will not be tolerated.
- I. Solid Rear Doors (Pass-thru lockers)
 1. Shall be formed from two pieces of minimum 18-gauge (1.2MM) cold rolled steel box formed and welded together using modern Inert Gas Metal Arc Welding techniques. The one piece door with inner and outer door skins shall have a combined steel thickness of no less than 0.096 inches (2.4MM) thick.
 2. Each locker module shall have one rear door each and allow evidence to be removed from all compartments at once.
 3. Each rear door shall have multi-point engagement with a built-in L handle lock. Access to all lock mechanisms shall be hidden behind cover plates that are secured with tamperproof fasteners.
- J. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and letters at least 3/8 inch high.
- K. Materials:
 1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
- L. Finish: Factory applied electrostatic powder coat paint.
 1. Color: As selected by Architect from manufacturer's full range of standard and non-standard colors.
- M. Refrigerated Inserts: Provide all stainless steel refrigerator with pass-thru or non-pass-thru individual compartments as scheduled.
 1. Construction: 18 gauge stainless steel with 2-inch insulated walls and stainless steel interior panels.
 2. Non pass-thru is emptied and reset from the front with a keyed release mechanism.
 3. Shall have a stainless steel interior with spring loaded door hinges to hold each door closed.
 4. Shall have magnetic seals on outer doors.
 5. Shall have circulation fans that can maintain an even temperature throughout the interior of the fridge.
 6. Provide digital controls with all settings preset to maintain 38 deg to 42 deg Fahrenheit. Provide circulation fans that can maintain a consistent temperature throughout the interior of the unit.
 7. Provide Audible Alarm.
 8. Locks: Refrigerator compartment locking mechanism shall operate with the same pass-thru or non-pass-thru mechanism as the main evidence lockers.
 9. Finish: Stainless Steel.
- N. Basis of Design Schedule:
 1. EQ-3A: Pass-thru Evidence Locker by Spacesaver w/ Multiple Rear Doors.
 - a. Size: 82" H x 24" D x 36" W. Configuration: (8) Openings.
 2. EQ-3B: Pass-thru Evidence Locker with Refrigerator Insert by Spacesaver w/ Multiple Rear Doors.
 - a. Size: 82" H x 24" D x 36" W. Configuration: (5) Openings & (1) Refrigerated Insert with (4) Compartments.

3. EQ-4: As indicated on Equipment Schedule on Drawings.
 - a. Size: 82" H x 24" D x 36" W. Configuration: (8) Refrigerated Compartments.
4. EQ-5: As indicated on Equipment Schedule on Drawings.
 - a. Size: 82" H x 24" D x 36" W. Configuration: (2) Compartments.
5. EQ-6: As indicated on Equipment Schedule on Drawings.
 - a. Size: 82" H x 18" D x 36" W. Configuration: (2) Compartments.

2.5 WEAPONS STORAGE LOCKERS (EQ-8, EQ-9, EQ-10)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Spacesaver Corporation.
 2. Steele Solutions.
 3. Southwest Solutions Group.
 4. DATUM Storage Systems.
 5. Fasco Security Products, Inc.
- B. Size: As indicated on Equipment Schedule on Drawings.
- C. Configuration: As indicated on Equipment Schedule on Drawings.
- D. Construction:
 1. Cabinet:
 - a. The cabinet shall be a one-piece assembly with an outside width of 42.38 inches 1076 millimeters, a useable inside width 36.5 inches 927 millimeters respectively, an outside height of 84 inches 2133.6 millimeters, and an outside depth of 16.25 inches 412 millimeters.
 - b. The cabinet shall be constructed of 18-gauge 1.2 millimeter double-walled upright posts welded to 18-gauge 1.2 millimeter flat plate steel sidewalls with a diamond mesh perforation.
 - c. The back wall of the cabinet shall be constructed of 18-gauge 1.2 millimeter steel perforated with diamond mesh and shall be welded to the upright posts.
 - d. The upright posts shall have interior attachment keyhole slots on 1.5 inch 38 millimeter vertical centers.
 - e. The top and bottom covers shall be made of 16-gauge 1.5 millimeter steel welded to the upright posts.
 - f. Cabinet doors shall be heavy-duty 18-gauge 1.2 millimeter, folding and fully retractable in the open position. The cabinet doors shall also include a diamond mesh perforation for visibility as well as rotating locking bars for security.
 - g. Locking bars shall lock at a single common point.
 - h. Cabinet construction to have an inherent strength that would prevent an individual from manipulating components (without tools) such that the weapon, receiver, or barrel could be removed.
 - i. Overall cabinet design such that a weapon, receiver, or barrel cannot be removed by disassembly of the weapon/component and/or the rack without damage to the rack.
 - j. Hinged locking bars for racks have the hinge pin welded or otherwise secured to prevent disassembly.
 - k. Finish: shall be factory applied electrostatic powder coat paint

2. Bases:
 - a. Shall be constructed of 16-gauge 1.5 millimeter steel.
 - b. Base designs shall be available for supporting a variety of weapon types.
 - c. Finish:
 - 1) Bases using standard universal stock cups shall have a factory applied electrostatic powder coat paint
 - 2) Designs where stock of weapon contacts base shall have a minimum 8mil thick black thermoplastic material finish
3. Support Rails:
 - a. Support rails shall be constructed of 14-gauge 1.9 millimeter steel and be punched to accept standard, extended standard, wide, extra wide, long, pistol, standard transport, large transport, and/or receiver mounts barrel supports.
 - b. Support rails shall contain four (4) rivet heads that interlock with the cabinet interior attachment keyhole slots.
 - c. Finish: Shall be factory applied electrostatic powder coat paint
4. Back Panel Kit:
 - a. Back Panel Kit shall be constructed of 14-gauge 1.9 millimeter steel.
 - b. Back panel hole pattern shall be consistent with universal weapon rack support rails.
 - c. Back panel shall be compatible with all existing weapon rack designs (excluding mini and 18 inches 457.2 millimeter over storage cabinets), barrel supports, receiver brackets, standard bases, and intermediate shelves.
 - d. Back Panel must be able to support 700 lbs.
 - e. Back Panel shall be compatible with existing standard bases and maintain bracket spacing.
 - f. Back Panel shall be able to co-exist with bin systems and intermediate shelves.
 - g. Finish: Shall be factory applied electrostatic powder coat paint
5. Barrel Supports:
 - a. Barrel supports shall be constructed of 14-gauge 1.9 millimeter steel
 - b. Finish: Shall have factory applied electrostatic powder coat paint and dipped in black, PVC, .060-.075 inch 1.52-1.9 millimeter thickness.
 - c. Extra wide and long barrel supports to be welded assemblies.
6. Bin Storage Systems:
 - a. Bin storage systems shall be constructed of 18-gauge 1.2 millimeter steel.
 - b. Bin storage system shall have the ability to create 1/3, 2/3, and full width storage cubicle compartments. The system shall have the flexibility for those compartments to be placed on the left hand, center, and/or right hand positions within the weapon racks usable storage space.
 - c. Bin storage system shelving shall have flexibility of vertical adjustment on 2.75 inches 69.9 millimeter increments
 - d. Bin storage system shall be capable of being installed and adjusted easily without the use of fasteners
 - e. Finish: Shall have factory applied electrostatic powder coat paint
7. Individual Stock Supports:
 - a. Shall be constructed of 14-gauge 1.9 millimeter steel
 - b. Mounting tabs and hole pattern shall be compatible with universal weapon rack support rails and back panels
 - c. Shall be capable of withstanding 20 lbs static loading

- d. Shall be capable of mounting standard Universal Base Support Cups
- e. Shall be capable of supporting standard issue rifles (including snipers), light machine guns (M240, M249, etc), and grenade launchers (M79, M32).
- f. Shall be compatible with all existing standard weapon rack designs
- g. Shall provide ease of installation consistent with other UWR accessories
- h. Finish: Shall have factory applied electrostatic powder coat paint
- 8. Intermediate Half Shelf:
 - a. Shall be constructed of 16-gauge 1.52 millimeter steel
 - b. Shall be fully adjustable within the limits of the 4-Post side panel design
 - c. Shall be compatible with all back panel components
 - d. Shall be capable of meeting 300 lbs static load testing: shelf deflection shall not exceed L/140
 - e. Finish: Shall have factory applied electrostatic powder coat paint. Designs where stock of weapon contacts base shall have a minimum 8mil thick black thermoplastic material finish
- E. Finish: Factory applied as indicated above for each component.
 - 1. Color: As selected by Architect from manufacturer's full range of standard and non-standard colors.
- F. Basis of Design: As indicated on Equipment Schedule on Drawings.
 - 1. EQ-8:
 - a. Size: 42" W x 16" D x 84" H
 - b. (1) Intermediate Full width Shelf
 - c. (2) Openings per unit; Bi-Fold Perforated Retractable Doors (Lock by Others)
 - d. Capacity: Provide barrel supports, support rails, stock cups and accessories for 20 long-arm Rifles
 - e. Basis of Design: UWRC4284 Universal Weapons Rack by Spacesaver Corporation.
 - 2. EQ-9:
 - a. Size: 42" W x 16" D x 84" H
 - b. (1) Full width overhead bin system with (4) heavy-duty shelves
 - c. (2) Openings per unit; Bi-Fold Perforated Retractable Doors (Lock by Others)
 - d. Capacity: Provide support rails, supports and accessories for 75 Handguns
 - e. Basis of Design: UWRC4284 Universal Weapons Rack by Spacesaver Corporation.
 - 3. EQ-10:
 - a. Size: 13" W x 6-1/2" D x 14-1/8" H
 - b. Configuration: (2) Compartment, Keyed
 - c. Mounting: Recessed Flush Mount
 - d. Basis of Design: EDHGF02 Wall Mounted Handgun Lockers by Spacesaver Corporation

2.6 GO BAG STORAGE SHELVING (EQ-12)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Spacesaver Corporation.
 - 2. Steele Solutions.
 - 3. Southwest Solutions Group.
 - 4. DATUM Storage Systems.

5. Fasco Security Products, Inc.
- B. Size: As indicated on Equipment Schedule on Drawings.
- C. Configuration: As indicated on Drawings.
- D. Construction: Wedge-lock type consisting of uprights, shelves, and shelf supports, designed to be assembled without fasteners or clips. Shelves shall not have any holes on exposed surfaces. Front and back flanges shall be flush with outside faces of posts. Design shall permit individual shelf adjustment and/or removal anywhere along the entire height of uprights.
- E. Materials and Workmanship:
 1. Fabricate units from Class 1, cold-rolled steel sheet with all bends sharp and true and no exposed "knife" edges.
 - a. All units shall be free of burrs, sharp edges and projecting hardware with smooth, non-abrasive surfaces and edges.
 - b. After fabrication, shelving shall exhibit no dents, "oil canning", buckling or other surface irregularities.
- F. Uprights:
 1. Formed from steel sheet to a hollow "tee" shape for intermediate supports and formed angles for end supports. Uprights shall have keyhole slots on inner wall only. Provide with sheet steel panels full height and depth of end uprights. Provide intermediate "tee" uprights between adjacent units
- G. Shelves:
 1. Form from sheet steel with flanges on all sides and return hem on front and back flanges. Ends shall be formed to clear inside of upright offset panels. Shelves shall be independently adjustable. Provide all shelves with slots for file dividers.
- H. Canopy Tops:
 1. Same construction as shelf units.
- I. Shelf Supports:
 1. Form from heavy gauge steel sheet with four solid steel shoulder rivets, two per ear, that interlock with inner wall of uprights.
- J. Load Carrying Capabilities:
 1. Provide shelf units capable of supporting 40 pounds per lineal foot (18kg/305MM) with maximum deflection of L/140. Shelves shall exhibit no permanent deflection under fully loaded conditions.
- K. Accessories:
 1. Backs: Provide manufacturer's standard.
- L. Finish: Factory applied electrostatic powder coat paint.
 1. Color: As selected by Architect from manufacturer's full range of standard and non-standard colors.

- M. Basis of Design: Four-post shelving by Spacesaver Corporation.

2.7 LOCKS

- A. Cylinder Lock: Built-in, flush, cam lock with five-pin tumbler keyway, keyed separately and master keyed. Furnish two change keys for each lock and two master keys.
1. Key Type: Flat or grooved with minimum 2- by 2.68-inch key head for accessible lockers.
 2. Bolt Operation: Manually locking deadbolt or automatically locking spring bolt.

2.8 FABRICATION

- A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.
1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
 2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.
- B. Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds smooth and flush.
- C. Accessible Lockers: Fabricate as follows:
1. Locate bottom shelf no lower than 15 inches above the floor.
 2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.

2.9 ACCESSORIES

- A. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.
- B. Anchors: Material, type, and size required for secure anchorage to each substrate.
1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls for corrosion resistance.
 2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and floors or support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Follow Manufacturer's written instructions for installation of each type of product specified.

3.3 LOCKER INSTALLATION

- A. Install lockers level, plumb, and true; shim as required, using concealed shims.
 - 1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches (910 mm) o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
 - 2. Anchor single rows of metal lockers to walls near top of lockers and to floor.
 - 3. Anchor back-to-back metal lockers to floor.
- B. Welded Lockers: Connect groups together with manufacturer's standard fasteners, with no exposed fasteners on face frames.
- C. Equipment:
 - 1. Attach hooks with at least two fasteners.
 - 2. Attach door locks on doors using security-type fasteners.
 - 3. Identification Plates: Identify metal lockers with identification indicated on Drawings.
 - a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
 - b. Attach plates to upper shelf of each open-front metal locker, centered, with at least two aluminum rivets.
- D. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
 - 1. Attach recess trim to recessed metal lockers with concealed clips.
 - 2. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.
 - 3. Attach sloping-top units to metal lockers, with closures at exposed ends.

4. Attach finished end panels using fasteners only at perimeter to conceal exposed ends of nonrecessed metal lockers.

3.4 ADJUSTING

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding. Verify that integral locking devices operate properly.

3.5 PROTECTION

- A. Protect products from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.
- B. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by manufacturer.

END OF SECTION

SECTION 105626.13 – MOBILE STORAGE SHELVING UNITS (MECHANICALLY-ASSISTED)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Mechanically assisted, carriage mounted high-density mobile storage units, support rails, fabrication, and installation including leveling of support rails.
- B. Related Work, Not Furnished:
 - 1. Structural floor system capable of supporting live and dead loads required by prevailing building codes, including rolling loads of storage units to be installed.
 - 2. Finish floor covering materials and installation on concrete with recessed rail installation.
 - 3. Power wiring to units from adequate power supply. Final connections to units shall be provided by installer.
- C. Related Sections:
 - 1. Section 03300 – Concrete Work
 - 2. Sections in Division 9 – Finishes, relating to finish floor and base materials.

1.3 REFERENCES

- A. American Library Association (when applicable)
 - 1. Cantilever Bracket Type Metal Library Bookstacks; Library Technology Reports.]
- B. American National Standards Institute (ANSI) Standards:
 - 1. Applicable standards for fasteners used for assembly.
- C. American Society for Testing and Materials (ASTM) Standards:
 - 1. Applicable standards for steel materials used for fabrication.
- D. American Institute Of Steel Construction (AISC) Standards:
 - 1. Applicable standards for steel materials used for fabrication.

1.4 SYSTEM DESCRIPTION

- A. General: The system consists of [manufactured][owner furnished] storage units mounted on manufacturer's track-guided carriages to form a compact storage system. System design permits access to any single aisle by manually moving units until the desired aisle is opened. The carriage/rail system provides uniform carriage movement along the total length of travel, even with unbalanced loads.
- B. Carriage System Design and Features: The carriage system consists of a formed structural steel frame with machined and balanced wheels riding on steel rails [recessed][surface] mounted to the floor. Rails shall be types selected by the manufacturer to ensure smooth operation and self-centering of mobile storage units during travel without end play or binding. Rail types, quantities and spacing shall be selected by the manufacturer to suit installation conditions and requirements. All bearings used in the drive mechanism shall be permanently shielded and lubricated.
- C. Movement Controls: Triple or single arm operating wheels with rotating hand knobs shall be provided on the accessible (drive) ends of shelf units, centered on the end panel, located 40 inches (1015MM) from the base of each unit to permit units to be moved to create a single aisle opening. Turning the handle transmits power through chain drive to drive wheels on each carriage.
- D. Drive System: The system shall be designed with a positive type mechanically-assisted drive which minimizes end play, ensures there is no play in the drive handle, and that carriages will stop without drifting.
 - 1. System shall include a chain sprocket drive system for each movable carriage to ensure that carriages move uniformly along the total length of travel, even with unbalanced loads. All system components shall be selected to ensure a smooth, even movement along the entire carriage length. Drive system gearing shall be designed to permit 1 lb. of force applied to the drive handle to move a minimum of 4,000 lbs. of load.
 - 2. A tensioning device shall be provided on each chain drive with provision for adjusting tension without removing end panels.
 - 3. All bearings used in the drive mechanism shall be permanently shielded and lubricated.
- E. Safety Features:
 - 1. Color-coded visual indicators shall provide verification that carriages are in a locked or unlocked mode.
 - 2. A single safety lock button, mounted on each operating wheel hub, will permit moving a carriage in either direction to create a new access aisle when pulled out (unlocked), or locking the carriage when pushed in.
- F. Finishes:
 - 1. Fabricated Metal Components And Assemblies: Manufacturer's standard powder coat paint finish.
 - 2. End Panels, Accessible Ends: [Plastic laminate, manufacturer's standard textures and patterns.] [Manufacturer's standard powder coat paint finish.]

1.5 PERFORMANCE REQUIREMENTS

- A. Design Requirements:
 - 1. Limit overall height to 6'-10" AFF.
 - 2. Limit overall system length to 15'-3".
 - 3. Limit overall system width to 7'-1".
- B. Ease of Movement: Provide mechanically assisted units capable of being moved by exerting a maximum horizontal force of 5 pounds on the operating wheel.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's product literature and installation instructions for each type of shelving, track and installation accessory required. Include data substantiating that products to be furnished comply with requirements of the contract documents.
- B. Shop Drawings: Show fabrication, assembly, and installation details including descriptions of procedures and diagrams. Show complete extent of installation layout including clearances, spacings, and relation to adjacent construction in plan, elevation, and sections. Indicate clear exit and access aisle widths; access to concealed components; assemblies, connections, attachments, reinforcement, and anchorage; and deck details, edge conditions, and extent of finish flooring within area where units are to be installed.
 - 1. Show installation details at non-standard conditions. Furnish floor layouts, technical and installation manuals for every unit shipment with necessary dimensions for rail layout and system configuration at the project site. Include installed weight, load criteria, furnished specialties, and accessories.
 - 2. Provide layout, dimensions, and identification of each unit corresponding to sequence of installation and erection procedures. Specifically include the following:
 - a. Location, position and configuration of tracks on all floors.
 - b. Plan layouts of positions of carriages, including all required clearances.
 - c. Details of shelving, indicating method and configuration of installation in carriages.
 - 3. Provide location and details of anchorage devices to be embedded in or fastened to other construction.
 - 4. Provide installation schedule and complete erection procedures to ensure proper installation.
- C. Samples: Provide minimum 3 inch (76MM) square example of each color and texture on actual substrate for each component to remain exposed after installation.
- D. Selection Samples: For initial selection of colors and textures, submit manufacturer's color charts consisting of actual product pieces, showing full range of colors and textures available.
- E. Warranty: Submit draft copy of proposed warranty for review by the Architect/Engineer.

- F. Maintenance Data: Provide in form suitable for inclusion in maintenance manuals for mobile storage units. Data shall include operating and maintenance instructions, parts inventory listing, purchase source listing, emergency instructions, and related information.
 - 1. Submit manufacturer's instructions for proper maintenance materials and procedures.
 - 2. Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated use conditions. Include precautions against using materials and methods which may be detrimental to finishes and performance.
- G. Reference List: Provide a list of recently installed mobile storage units to be visited by owner, architect, and contractor. Intent of list is to aid in verifying the suitability of manufacturer's products and comparison with materials and product specified in this section.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Engage an experienced manufacturer who is ISO 9001 certified for the design, production, installation and service of carriage mounted high-density mobile storage units and support rails. Furnish certificate attesting manufacturer's ISO 9001 quality system registration.
- B. Installer Qualifications: Engage an experienced installer who is a manufacturer's authorized representative for the specified products for installing carriages and anchoring shelving units to carriages.
 - 1. Minimum Qualifications: 1-year experience installing systems of comparable size and complexity to specified project requirements.
 - 2. Guaranteed 24-hour service response time.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Follow manufacturer's instructions and recommendations for delivery, storage and handling requirements.

1.9 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions before fabrication. Indicate verified measurements on Shop Drawings. Coordinate fabrication and delivery to ensure no delay in progress of the Work.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating mobile storage units. Coordinate construction to ensure actual dimensions correspond to established dimensions.

1.10 SEQUENCING AND SCHEDULING

- A. Sequencing: Coordinate storage shelving system installation with other work to minimize possibility of damage and soiling during remainder of construction period.

- B. Scheduling: Plan installation to commence after finishing operations, including painting have been completed.
- C. Built-In Items: Provide components which must be built in at a time which causes no delays general progress of the Work.
- D. Pre-installation Conference: Schedule and conduct conference on project site to review methods and procedures for installing mobile storage units including, but not limited to, the following:
 - 1. Review project conditions and levelness of flooring and other preparatory work performed under other contracts.
 - 2. Review and verify structural loading limitations.
 - 3. Recommended attendees include:
 - a. Owner's Representative.
 - b. Prime Contractor or representative.
 - c. The Architect.
 - d. Manufacturer's representative.
 - e. Subcontractors or installers whose work may affect, or be affected by, the work of this section.

1.11 WARRANTY

- A. Provide a written warranty, executed by Contractor, Installer, and Manufacturer, agreeing to repair or replace units which fail in materials or workmanship within the established warranty period. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have under General Conditions provisions of the Contract Documents.
- B. Warrant the entire movable compact shelving installation against defects in materials and workmanship for a period of five years from date of acceptance by the Owner.

1.12 MAINTENANCE

- A. Provide manufacturer's extended maintenance agreement for 4 years, commencing on the day the standard maintenance warranty ends.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. General: Products are based upon mobile shelving system products manufactured by Spacesaver Corporation.
- B. Manufacturers: Subject to compliance with requirements of the specifications, provide comparable product by one of the following manufacturers:

- a. Reynolds Business Systems, Inc.
- b. Spacefile International Corporation.
- c. DATUM Storage Systems.

2.2 BASIC MATERIALS

- A. General: Provide materials and quality of workmanship which meet or exceed established industry standards for products specified. Material thicknesses/gauges are manufacturer's option unless indicated otherwise.
- B. US Certified Steel.

2.3 GROUT

- A. General: Provide non-shrink, non-staining hydraulic cement compound conforming to the following requirements, based on the performance of the test specimens at room temperature and in laboratory air.
 - 1. Linear Movement: No shrinkage while setting; maximum expansion limited to .002 inches per linear inch.
 - 2. Compressive Strength: Based on two inch cubes made following ASTM standards, tested on a Balding-Southward machine of 60,000 pounds capacity, meet or exceed the following:
 - a. Age: 1 hour ---- 4,500 psi
 - 7 days ---- 8,000 psi

2.4 MANUFACTURED COMPONENTS

- A. Rails:
 - 1. Material: ASTM/AISI Type 1035 or 1045 steel, manufacturer's selection.
 - 2. Capacity: 1,000 pounds per lineal foot (1385kg/M) of carriage.
 - 3. Minimum Contact Surface: 5/8 inch (16MM) wide.
 - 4. One piece structural rail with center flange guidance. Two piece rail is unacceptable.
 - 5. Provide rail sections in minimum 6 foot (1.83M) lengths.
 - 6. Rails shall be surface mounted with leveling screws and steel ADA ramp.
 - 7. Provide rail connections designed to provide horizontal and vertical continuity between rail sections, to gradually transfer the concentrated wheel point load to and from adjoining rail sections. Butt joints are not permitted.
- B. Floor / Ramp:
 - 1. Floor/Ramp Sheathing: Minimum 3/4 inch (19MM), 5-ply underlayment grade plywood. Particle board sheathing materials are not permitted.
 - 2. Finished flooring materials shall be provided by others

C. Carriages:

1. Provide manufacturer's design movable carriages fabricated of welded or bolted steel construction. Galvanized structural components and/or riveted carriages are unacceptable.
2. Provide fixed carriages of same construction and height as the movable carriages, anchored to rails. Setting fixed shelving directly on floors is not permitted.
3. When required, provide bolted carriage splices designed to maintain proper unit alignment and weight load distribution.
4. Design carriages to allow the shelving uprights to recess and interlock into the carriages a minimum of 3/4 inch (19MM). Top mount carriages are unacceptable.
5. Provide each carriage with two wheels per rail.

D. Drive / Guide System:

1. Design: Provide drive system which prevents carriage whipping, binding and excessive wheel/rail wear under normal operation.
 - a. If line shafts are used, all wheels on one side of carriage shall drive.
 - b. If synchronized drives are used, a minimum of one wheel assembly driving both sides of carriage at center location required. Drive shaft shall exhibit no play or looseness over the entire length of that assembly.
2. Shafts: Solid steel rod or tube.
3. Shaft Connections: Secured couplings.
4. Bearing Surfaces: Provide rotating load bearing members with ball or roller bearings. Provide shafts with pillow block or flanged self-aligning type bearings.

E. Wheels:

1. Capacity: Minimum load capacity per wheel: 3200 lbs (1455kg).
2. Size: Minimum 5 inches (127MM), outside diameter drive wheels. Smaller wheels are unacceptable.
3. Guides: Determined by manufacturer; minimum 2 locations.

F. Face Panels:

1. Steel Finishes: Selected by the Architect from manufacturer's full line of available colors and patterns.

G. Accessories: See Descriptions in 3.8 Schedule.

2.5 FABRICATION

- A. General: Coordinate fabrication and delivery to ensure no delay in progress of the Work.
- B. Wheels: Provide precision machined and balanced units with permanently shielded and lubricated bearings.

- C. Carriages: Fabricate to ensure no more than 1/4 inch (6MM) maximum deviation from a true straight line. Splice and weld to ensure no permanent set or slippage in any spliced or welded joint when exposed to forces encountered in normal operating circumstances.
- D. Shelving, Supports and Accessories: 18 gauge heavy-duty shelf with 14 gauge H type supports. Quantity of reinforcements and supports per manufacturer specification. Refer to 3.8 Schedule for more information.

2.6 FINISHES

- A. Colors: As selected by Architect from manufacturer's full line of available colors.
- B. Paint Finish: Provide factory applied electrostatic powder coat paint. Meet or exceed specifications of the American Library Association.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine floor surfaces with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of mobile storage units.
- B. Verify that building structural system is adequate for installing mobile storage units at locations indicated on approved shop drawings.
- C. Verify that intended installation locations of mobile storage units will not interfere with nor block established required exit paths or similar means of egress once units are installed.
- D. Prepare written report, endorsed by Installer, listing conditions detrimental to proper performance of mobile storage units, once installed.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Rails:
 - 1. Lay out rails using full length units to the maximum extent possible. Use cut lengths only at ends to attain total length required. Locate and position properly, following dimensions indicated on approved shop drawings. Verify thickness of finished floor materials to be installed (by others) and install level 1/16 inch (0.6MM) above finished floor surfaces.
 - 2. Verify level, allowing for a minimum 1/4 inch (6MM) of grout under high points. Position and support rails so that no movement occurs during grouting.
 - 3. Surface mount rails with leveling screws. Install rails to ensure proper load transfer from rail to supporting floor. Install steel ADA ramp at locations as indicated on shop drawings.
 - 4. Installation Tolerances: Do not exceed levelness of installed rails listed below:

- a. Maximum Variation From True Level Within Any Module: 3/32 inch (2.4MM).
 - b. Maximum Variation Between Adjacent (Parallel) Rails: 1/16 inch (1.6MM), perpendicular to rail direction.
 - c. Maximum Variation In Height: 1/32 inch (.8MM), measured along any 10 foot (3.05M) rail length.
 5. Verify rail position and level; anchor to structural floor system with anchor type and spacings indicated on approved shop drawings.
- B. Floors/Ramps:
 1. General: Finished elevation shall be 1/16 inch (1.6MM) below top of rails.
 2. Place floors and ramps to the extent indicated on approved shop drawings. Do not extend ramps beyond the ends of carriages.
 3. Construct floors and ramps to prevent warping or deformation of floor panels in a normal operating environment. Support panels on levelers at maximum 16 inches on center.
 4. Ramp Slope: Do not exceed the following:
 - a. ADA Accessible Ramps: Maximum 1:12 slope (4.76 degrees).
- C. Shelving Units Installation:
 1. General: Follow layout and details shown on approved shop drawings and manufacturer's printed installation instructions. Position units level, plumb; at proper location relative to adjoining units and related work.
 2. Carriages:
 - a. Place movable carriages on rails. Ensure that all wheels track properly and centering wheels are properly seated on centering rails. Fasten multiple carriage units together to form single movable base where required.
 - b. Position fixed carriage units to align with movable units.
 3. Shelving Units:
 - a. Permanently fasten shelving units to fixed and movable carriages with vibration-proof fasteners.
 - b. Stabilize shelving units following manufacturer's written instructions. Reinforce shelving units to withstand the stress of movement where required and specified.

3.3 FIELD QUALITY CONTROL

- A. Verify shelving unit alignment and plumb after installation. Correct if required following manufacturer's instructions.
- B. Remove components which are chipped, scratched, or otherwise damaged and which do not match adjoining work. Replace with new matching units, installed as specified and in manner to eliminate evidence of replacement.

3.4 ADJUSTING

- A. Adjust components and accessories to provide smoothly operating, visually acceptable installation.

3.5 CLEANING

- A. Immediately upon completion of installation, clear components and surfaces. Remove surplus materials, rubbish and debris resulting from installation upon completion of work and leave areas of installation in neat, clean condition.

3.6 DEMONSTRATION/TRAINING

- A. Schedule and conduct demonstration of installed equipment and features with Owner's personnel.
- B. Schedule and conduct maintenance training with Owner's maintenance personnel. Training session should include lecture and demonstration of all maintenance and repair procedures that end user personnel would normally perform.

3.7 PROTECTION

- A. Protect system against damage during remainder of construction period. Advise Owner of additional protection needed to ensure that system will be without damage or deterioration at time of substantial completion.

3.8 SCHEDULE

- A. EQ-7A: (2) Rows of Fixed Shelving Units
 - 1. Length: 7'-0"; made of (2) 42" Sections
 - 2. Depth: 16-9/16"
 - 3. Height: Shelf Height: 73"; Overall Height: 80-1/4" including rail and carriage
 - 4. Shelving: (5) Equally spaced heavy-duty shelves to provide (6) openings at $\pm 12"$ o.c.
 - a. Provide backstops and (3) dividers per shelf
- B. EQ-7B: (3) Rows of Mobile Shelving Units
 - 1. Length: 7'-0"; made of (2) 42" Sections
 - 2. Depth: 32-9/16"
 - 3. Height: Shelf Height: 73"; Overall Height: 80-1/4" including rail and carriage
 - 4. Shelving: (5) equally spaced heavy-duty shelves to provide (6) openings at $\pm 12"$ o.c.
 - a. Provide center-stops and (3) dividers per shelf

END OF SECTION

SECTION 105723 - CLOSET AND UTILITY SHELVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Adjustable Wire Closet Shelving.

1.2 RELATED SECTIONS

- A. Section 061000 – Rough Carpentry: In-wall framing and blocking for support of items scheduled.

1.3 REFERENCED STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. Accessibility Standard: Equipment to comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data: Submit data from Manufacturer describing size, finish, details of function and attachment methods.
 - 2. Shop Drawings: Submit shop drawings prepared specifically for the Project illustrating elevations, dimensions, and other data necessary
- B. Informational Submittals:
 - 1. Provide manufacturer's installation instruction.
 - 2. Warranty: Sample of proposed manufacturer warranty.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment on site protected from weather, direct sunlight and temperature extremes. Do not remove packaging prior to storage.
- B. Consult manufacturer if equipment is to be stored for an extended period of time.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard limited warranty agreeing to replace components that fail in material or workmanship within the specified warranty period.
 - 1. Warranty Period: 10 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain all system components and associated accessories from single source from single manufacturer.

2.2 ADJUSTABLE WIRE CLOSET SHELVING (EQ-21)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Organized Living, Inc.
 - 2. ClosetMaid.
 - 3. Triton Products.
- B. Fully Adjustable Systems: Fabricated storage systems consisting of adjustable uprights, shelving, brackets, rods, and accessories. Provide components designed to be moved or reconfigured up, down, or side-to-side without tools.
 - 1. Basis of Design: freedomRail System fR3Adj4S16" by Organized Living, Inc.
- C. Configuration: Essential, 4-Shelf, 16" Depth, Adjustable.

2.3 PERFORMANCE CRITERIA

- A. Maximum Loading:
 - 1. System (hanging Rail): 170 lbs./linear ft. of wall.
 - 2. Upright Spacing:
 - a. 24" o.c.: 100 lbs./linear ft. of shelf.
 - b. 30" o.c.: 75 lbs./linear ft of shelf.
 - c. 36" o.c.: 50 lbs./linear ft of shelf.
- B. Regulatory Requirements: Where ADA compliance is required, configure systems to conform to ADAABA Guideline's side and front reach ranges.

2.4 COMPONENTS

- A. Hanging Rails: 2.2 mm/14 gauge steel with baked-on epoxy coating. Include rail covers to hide mounting hardware.
- B. Uprights: 2.2 mm/14 gauge steel with baked-on epoxy coating. Double-slotted design to accept brackets at 1-inch intervals. Provide upright covers to hide mounting hardware.
- C. Shelving Brackets: 2.2 mm/14 gauge steel designed for use with shelving selected.
- D. Ventilated Wire Shelving: Heavy duty steel with baked on epoxy coating. Low profile front lip with double bars front and rear. Designed to snap securely in place.

2.5 INSTALLATION HARDWARE

- A. All anchors and hardware to be provided by manufacturer.
- B. Stud Screws: Manufacturer's hardened steel screws with piercing points for wood or metal studs.

- C. Anchors: Manufacturer's heavy-duty anchors for securing hanging Rail to drywall per installation instructions.
- D. Attachment Hardware: Manufacturer's fixed shelf bolts, panel clips, movable shelf pins, and other hardware as needed for secure attachment of components.

2.6 MATERIALS

- A. Steel: AISI Grade 1008 cold rolled carbon steel.
- B. Epoxy Powder Coat Finish: Manufacturer's baked-on epoxy finish.

2.7 FINISHES

- A. System Color: White.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that substrates are plumb, level, smooth, clean, dry, sound, and fully finished and painted, ready for closet organizer installation. Correct deficiencies prior to commencing installation.

3.2 INSTALLATION

- A. General: Install units in accordance with manufacturer's recommendations and approved Shop Drawings.
- B. Use attachment hardware, fasteners, and anchors provided by the manufacturer.
- C. Stud Walls: Mount hanging Rail to studs.
- D. Protect installed products until completion of project.
- E. Clean exposed surfaces as recommended by Manufacturer not more than three days prior to Substantial Completion.
- F. Touch-up, repair or replace damaged products prior to Substantial Completion.

END OF SECTION

SECTION 107316 – CANOPIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Work in this section includes furnishing and installation of roll-formed aluminum overhead hanger rod style canopies
- B. Related Items and Considerations
 - 1. Flashing of various designs may be required. Specialty flashing to be supplied by installer.
 - 2. Determine wall construction, make-up and thickness.
 - 3. Ensure adequate wall condition to carry canopy loads where required.
 - 4. Consider water drainage away from canopy where necessary.
 - 5. Any necessary removal or relocation of existing structures, obstructions or materials.

1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, mounting heights, and attachment details.
 - 2. Detail fabrication and assembly of canopy.
 - 3. Show locations for blocking, reinforcement, and supplementary structural support.
 - 4. PE Stamped calculations are required and must be signed and sealed by an engineer licensed within the State and jurisdiction of the Project.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors and textures available.
- D. Samples for Verification: Showing color and texture or finish selected.
- E. Welding Certificates

1.3 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

- 1.4 Welding Qualifications: Qualify procedures and personnel according to the following: 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel." 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
- 1.5 WARRANTY
- A. Special Warranty: Manufacturer and fabricator agree to repair or replace components of awnings that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
- a. Structural failures including framework.
- b. Deterioration of fabric including seam failure.
- c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Super Lumideck HR by Mapes Canopies.
1. For substitutions proposed by Contractor, submit detailed product data for basis-of-design products and proposed substitutions for comparison, in accordance with substitution procedures specified in Division 01.

2.2 MATERIALS

- A. Decking shall consist of 3" extruded flat soffit 0.078-inch aluminum decking.
- B. Intermediate framing members shall be extruded aluminum, alloy 6063-T6, in profile and thickness shown in current Mapes brochures.
- C. Hanger rods and attachment hardware shall be a standard finish.
- D. Fascia shall be standard extruded 8" J style.

2.3 FINISHES

- A. Finish shall be shop finished with 2-coat Kynar finish in color as selected by Architect from manufacturer's standard range.

2.4 FABRICATION

- A. Canopy shipped preassembled for installation.
- B. All connections shall be mechanically assembled utilizing 3/16 fasteners with a minimum shear.
- C. Concealed drainage: Water shall drain from covered surfaces into intermediate trough and be directed to front scupper.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exterior surfaces, with Installer present, for compliance with requirements and other conditions affecting installation.

3.2 INSPECTION

- A. Confirm surrounding area is ready for the canopy installation
- B. Installer shall confirm dimensions and elevations to be as shown on drawings.
- C. Erection shall be performed by an approved installer and scheduled after all concrete, masonry, and roofing in the area is complete.

3.3 INSTALLATION

- A. Installation shall be in strict accordance with manufacturer's shop drawings. Particular attention should be given to protecting the finish during handling and erection.

3.4 CLEANING

- A. Touch up factory finish to restore any damaged areas
- B. Clean all field welds, connections, and surfaces.

END OF SECTION

DIVISION 10 – SPECIALTIES
SECTION 10 75 16 – GROUND SET FLAGPOLES

1.1 SCOPE OF WORK

The Contractor shall provide all necessary labor, tools, materials and services to supply and install the flagpole, as specified in this section and as shown in the drawings.

2.1 RELATED SECTIONS

A. Division 03 Sections: Concrete

3.1 MATERIALS

Manufacturer:
PLP Composite Technologies
57 Creamery Road, P.O. Box 429
Fitzwilliam, New Hampshire, 03447
(800) 262-6075

A. Flagpole:

- a. Model No.: PLP201HB (20' tall)
- b. Model No.: PLP251HB (25' tall)
- c. Finish: Bronze with a satin brush acrylic finish
- d. Quantity: 2 (20' tall)

B. Footings and submittals:

Concrete Footings for all flagpoles are to be per Manufacturers concrete specifications. Submit catalogue cuts of flagpoles prior to supply and installation.

4.1 EXECUTION

- A. The Contractor shall furnish shop drawings from the equipment manufacturer detailing specifications, finish, method of fastening, mounting and installation. All flagpoles shall be installed as per the manufacturer's specifications. All materials shall be as specified.
- B. The contractor shall install flagpoles as shown on the detail drawings and according to the manufacturer's specifications.

SECTION 111100 - SPECIALTY EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Armory Workbench.

1.2 RELATED SECTIONS

- A. Section 061000 – Rough Carpentry: In-wall framing and blocking for support of items scheduled.
- B. Division 26 Sections for wiring disconnect switches, and other electrical materials required to complete installation.

1.3 REFERENCES

- A. UL Certification: Provide electric equipment and components that are evaluated by UL for fire, and electric shock according to applicable safety standards and that are UL certified for compliance and labeled for intended use.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment on site protected from weather, direct sunlight and temperature extremes. Do not remove packaging prior to storage.
- B. Consult manufacturer if equipment is to be stored for an extended period of time.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

- A. Parts Only: Manufacturer's standard form in which manufacturer agrees to repair or replace any part of the equipment assembly that fails within specified warranty period.
 - 1. Warranty Period: Three years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of equipment and associated accessories from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Equipment to comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.3 ARMORY WORKBENCH (EQ-11)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Combat Weapon Storage Systems.
 2. Spacesaver.
 3. DATUM Storage Systems.
 4. Hallowell, A division of List Industries, Inc.
 5. Penco Products.
- B. Size: 84-inch height, 37-inch wide, 30-inch deep.
- C. Workbench: Welded construction from 18-gauge sheet steel.
1. Countertop: Non-skid surface w/ pre-cut holes and grommets for electrical connections. Adjustable height from 28- to 42-inches.
 2. Under-counter Drawer: Roll-out, built-in lock, full width of workbench.
 3. Casters: Provide heavy-duty 150 kg steel swivel casters on each table leg, lockable, threaded or plate attachment.
- D. Back Panel: Full-height slotted back panel fabricated from 18-gauge sheet steel.
1. Provide with overhead light.
 2. Shelves: 16-gauge, with double bend at front and single bend at sides and back. Provide 2.
 3. Bins: Provide 8 metal bins.
 4. Pegs: Provide 4 pistol pegs.
- E. Locks: Built-in locks.
- F. Materials:
1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
 2. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with A60 zinc-iron, alloy (galvannealed) coating designation.
- G. Finish: Baked enamel or powder coat.
1. Color: As selected by Architect from manufacturer's full range of standard and non-standard colors.
- H. Basis of Design: Armory Workbench by Combat Weapons Storage Systems.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 24 00 - WINDOW SHADES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Manually operated roller shades with single roller.
- B. Manually operated roller shades with dual rollers.

1.2 RELATED SECTIONS

- A. Section 06 10 53 - Rough Carpentry
- B. Section 09 29 00 - Gypsum Board
- C. Section 09 50 00 - Acoustical Ceilings

1.3 REFERENCES

- A. NFPA 70 - National Electrical Code
- B. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 26 - Source Quality Control Reporting:
- B. Product Data: Manufacturer's data sheets on each product specified, including:
 - 1. Preparation instructions and recommendations.
 - 2. Installation and maintenance instructions.
 - 3. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 4. Storage and handling requirements and recommendations.
 - 5. Mounting details and installation methods.
 - 6. Typical wiring diagrams including integration of motor controllers with building management system, audiovisual and lighting control systems as applicable.
- C. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.
- D. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings, field verified window dimensions, quantities, type of shade, controls, fabric, and color, and include opening sizes and key to typical mounting details.
- E. Selection Samples: For each finish product specified, two complete sets of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, two complete sets of shade components, unassembled, demonstrating compliance with specified requirements. Shade fabric sample and

aluminum finish sample as selected, representing actual product, color, and patterns. Mark face of material to indicate interior faces.

- G. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
- H. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years' experience in manufacturing products comparable to those specified in this section.
- B. NFPA Flame-Test: Passes NFPA 701. Materials tested shall be identical to products proposed for use.
- C. Mock-Up: Provide a mock-up of one of each type roller shade assembly specified for evaluation of mounting, appearance and accessories.
 - 1. Locate mock-up in window(s) designated by Architect.
 - 2. Do not proceed with remaining work until mock-up is accepted by Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver window shades until building is enclosed and construction within spaces where shades will be installed is substantially complete.
- B. Deliver products in manufacturer's original, unopened, undamaged containers with labels intact.
- C. Label containers and shades according to Window Shade Schedule.
- D. Store products in manufacturer's unopened packaging until ready for installation.

1.7 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.8 PROJECT CONDITIONS

- A. Install roller shades after finish work and ambient temperature, humidity and ventilation conditions are maintained at levels recommended for project upon completion.

1.9 WARRANTY

- A. Hardware and Shade Fabric: Draper's standard twenty-five year limited warranty.
- B. Spring Roller Shades: Draper's standard ten year limited warranty.
- C. Motors and Controls: Draper's standard five year limited warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Draper, Inc., which is located at: 411 S. Pearl P. O. Box 425 ; Spiceland, IN 47385-0425; Toll Free Tel: 800-238-7999; Tel: 765-987-7999; Email:[request info](mailto:requestinfo@draperinc.com); Web:www.draperinc.com
- B. Approved Equals: Hunter Douglas, MechoShade and Lutron.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 MANUALLY OPERATED WINDOW SHADES WITH SINGLE ROLLER

- A. Manually Operated Window Shades with Independent Control: Manually operated, vertical roll-up, fabric window shade with components necessary for complete installation; Manual FlexShade as manufactured by Draper, Inc.
 - 1. Operation: Bead chain and clutch operating mechanism allowing shade to stop when chain is released. Designed never to need adjustment or lubrication. Provide limit stops to prevent shade from being raised or lowered too far.
 - a. Clutch mechanism: Fabricated from high carbon steel and molded fiberglass reinforced polyester or injected molded nylon. White or Black color as selected by Architect.
 - b. Spring-assist bead chain clutch mechanism: Adjustment-free system includes spring-assist components to reduce lifting forces required to raise the shade. Manufacturer shall provide estimated torque for shade unit. Spring-assist is recommended on estimated non-spring-assist torque above 6 lb-in; required on shades with an estimated torque higher than 15 lb-in.
 - c. Bead chain loop: Stainless Steel.
 - d. Idler Assembly: Provide roller idler assembly of molded nylon with adjustable or spring-loaded length idler pin to facilitate easy installation, and removal of shade for service.
 - e. Bead Chain Hold Down: Spring-Loaded Tensioner complying with ANSI/WCMA A100.1-2022 safety standard.
 - 2. Roller Tube: Fabricated from extruded aluminum, galvanized steel, or enameled steel. Diameter, wall thickness, and material selected by manufacturer to accommodate shade type and size. Fabric connected to the roller tube with LSE (low surface energy) double sided adhesive specifically developed to attach coated textiles to metal. Adhesive attachment to eliminate horizontal impressions in fabric.
 - 3. Bottom Slat
 - a. Closed pocket elliptical slat: 1" (25mm) aluminum elliptical slat inside of a 1 5/8" (41mm) pocket with heat sealed ends

4. Mounting:
 - a. Mounting brackets.
 - b. Endcaps and fascia.
 - c. Endcaps and headbox.
5. Brackets: Plated stamped steel. Provide size compatible with roller size.
 - a. Mounted to jamb.
6. Endcaps: Stamped steel with universal design suitable for mounting to ceiling, wall, and jamb. Provide size compatible with roller size.
 - a. Endcap covers: To match fascia or headbox color.
7. Fascia: L shaped aluminum extrusion to conceal shade roller and hardware.
 - a. Attachment: Snaps onto endcaps without requiring exposed fasteners of any kind. Fascia can be mounted continuously across two or more shade bands. No notching is required.
 - b. Shape: Square Fascia Panel.
 - c. Finish: Custom powder coat as selected by the Architect.
8. Headbox Ceiling/Wall style: Aluminum fabrication with removable closure, endcaps, and back and top cover piece:
 - a. Finish: Custom powder coat as selected by the Architect.
9. Light Gap Reduction Channels.
 - a. L Angle - 3/4 inch (19 mm) by 1 inch (25 mm).
 - b. L Angle -1 inch (25 mm) by 2-3/4 inches (70mm).
 - c. U Channel -1 inch (25 mm) by 2-1/2 inches (64 mm).
H Channel - 1 inch (25 mm) by 5 inches (127 mm).

2.3 MANUALLY OPERATED WINDOW SHADES WITH DUAL ROLLER

- A. Manually Operated Window Shades with Independent Control: Manually operated, vertical roll-up, fabric window shade with components necessary for complete installation; Clutch-operated Dual Roller FlexShade as manufactured by Draper, Inc.
 1. Operation: Bead chain and clutch operating mechanism allowing shade to stop when chain is released. Designed never to need adjustment or lubrication. Provide limit stops to prevent shade from being raised or lowered too far.
 - a. Clutch mechanism: Fabricated from high carbon steel and molded fiberglass reinforced polyester or injected molded nylon. White or Black color as selected by Architect.
 - b. Spring-assist bead chain clutch mechanism: Adjustment-free system includes spring-assist components to reduce lifting forces required to raise the shade. Manufacturer shall provide estimated torque for shade unit. Spring-assist is recommended on estimated non-spring-assist torque above 6 lb-in; required on shades with an estimated torque higher than 15 lb-in.
 - c. Bead chain loop: Stainless Steel.
 - d. Idler Assembly: Provide roller idler assembly of molded nylon with adjustable or spring-loaded length idler pin to facilitate easy installation, and removal of shade for service.
 - e. Bead Chain Hold Down: Spring-Loaded Tensioner complying with ANSI/WCMA A100.1-2022 safety standard.

2. Dual-Roller Configuration:
 - a. Mounting:

Dual roller endcaps. Endcaps for surface or recessed mounting of dual roller window shades. 1028 steel stamping.
Idler endcap to have optional levelling adjustment.

 - 1) Dual roller fascia. Endcaps with fascia designed for surface mounting of dual roller window shades.
 - a) Endcaps: 1028 steel stamping.
 - 1) Idler endcap to have optional levelling adjustment.
 - b) Fascia: L-shaped cover of extruded aluminum, .060 wall. Assembly snaps onto endcaps without exposed fasteners.
 - c) Size: Determined by manufacturer based on fabric size, weight, and thickness and window opening size.
 - d) Finish: Powder coat.
 - 1) Selected from Manufacturers standard range
 - 2) Custom powder coat as selected by the Architect
 - 2) Dual roller with ceiling/wall headbox. Fascia, L-shaped top/back, and endcaps designed for wall or ceiling installation of dual roller window shades.
 - a) Endcaps: 1028 steel stamping.
 - 1) Idler endcap to have optional levelling adjustment.
 - b) Fascia: L-shaped cover of extruded aluminum, .060 wall. Assembly snaps onto endcaps without exposed fasteners.
 - c) Size: Determined by manufacturer based on fabric size, weight, and thickness and window opening size.
 - d) Finish: Powder coat.
 - 1) Selected from Manufacturers standard range.
 - 2) Custom powder coat as selected by the Architect.
3. Roller Tube: Fabricated from extruded aluminum, galvanized steel, or enameled steel. Diameter, wall thickness, and material selected by manufacturer to accommodate shade type and size. Minimum roller diameter 1.5 inches. Tube diameters less than 1.5 inches shall not be acceptable unless manufacturer provides deflection analysis showing deflection limited to $\leq \text{width(inches)}/700$ at 1.5X design load.
4. Fabric to tube attachments: LSE (low surface energy) double sided adhesive specifically developed to attach coated textiles to metal. Adhesive attachment to eliminate horizontal impressions in fabric.
5. Shade slat:
 - a. Closed pocket elliptical slat: 1 inch (25 mm) aluminum elliptical slat inside of a 1-5/8 inch (41 mm) pocket with heat sealed ends.
6. Light Gap Reduction Channels.
 - a. Aluminum L Angle – 3/4 inch (19 mm) by 1 inch (25 mm).
 - b. Aluminum L Angle -1 inch (25 mm) by 2-3/4 inches (70mm).
 - c. Vinyl L Angle-1-1/2 inches (38 mm) by 3/4 inch (19 mm).
 - d. U Channel -1 inch (25 mm) by 2-1/2 inches (64 mm).
 - e. H Channel – 1 inch (25 mm) by 5 inches (127 mm).

2.4 FABRIC

- A. Room Darkening Fabrics
 - 1. SunBloc Series SB9000: Close woven fiberglass base textile with sun-resistant vinyl film bonded to each side, opaque with minimum tensile strength of 190 pounds for warp and 180 pounds for fill. Fire rating: NFPA 701 1006-Test 1. Washable and stain resistant. Wt. 12 oz/sq yd. Same color both sides, .015 inches thick.
- B. Light-Filtering Fabrics
 - 1. E Screen™ 3% by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 3 percent open, .017 inches thick, 11.6 oz/square yard.
- C. Color and pattern: to be selected by architect from manufacturer's full line of color options.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Coordinate requirements for blocking and structural supports to ensure adequate means for installation of window shades.
- B. Coordinate requirements for blocking, construction of shade pockets, and structural supports to ensure adequate means for installation of window shades.
- C. Coordinate installation of recessed shade pockets with construction of suspended acoustical panel ceilings specified in Section 09 51 23.
- D. Coordinate installation of recessed shade pockets with construction of suspended gypsum board ceilings specified in Section 09 21 16.
- E. Coordinate requirements for power supply conduit, and wiring required for window shade motors and controls.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

B. Install roller shades level, plumb, square, and true. Allow proper clearances for window operation hardware.

C. Shade pockets:

1. Install shade pockets prior to installation of suspended ceiling system. Attach to supporting structure with screws through top of pocket at 24 inches (610 mm) minimum centers.
2. Install shade pockets in conjunction with installation of suspended ceiling system. Attach to supporting structure with screws through top of pocket at 24 inches (610 mm) minimum centers.
3. Install corner pieces securely and in alignment with pockets.
4. Install pocket ends securely and in alignment with pockets.
5. After interior construction is essentially complete, install shade and operating mechanism in pocket.
6. Install the following items to conceal roller and operating mechanism. Do not use exposed fasteners.
 - a) Fascias
 - b) Closure panels
 - c) Endcaps

D. Install headbox, side channels, and sill channel with sealant specified in Section 07 90 00 - Joint Protection.

E. Position shades level, plumb, and at proper height relative to adjacent construction. Secure with fasteners recommended by manufacturer.

3.4 TESTING AND DEMONSTRATION

A. Test motorized window shades to verify that controls, limit switches, interface to other building systems, and other operating components are functional. Correct deficiencies.

B. Test window shades to verify that operating mechanism, fabric retainer, and other operating components are functional. Correct deficiencies.

1. Chain and clutch.

C. During daylight hours, lower shades and turn off interior lights. Verify that there are no light leaks at perimeter or within shade assembly. Correct deficiencies.

D. Demonstrate operation of shades to Owner's designated representatives.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 SCHEDULES

A. Refer to Drawings for shade types and locations.

END OF SECTION

SECTION 123200 - MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

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 the following:
 - 1. Plastic-laminate-faced wood cabinets of stock and modified design.
 - 2. Plastic-laminate countertops.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood blocking for anchoring manufactured wood casework.
 - 2. Division 06 Section "Architectural Woodwork."
 - 3. Division 09 Section "Resilient Base and Accessories" for resilient base applied to manufactured wood casework.

1.3 DEFINITIONS

- A. MDF: Medium-density fiberboard.
- B. Exposed Portions of Cabinets: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches above floor, and surfaces visible in open cabinets.
- C. Semi-exposed Portions of Cabinets: Surfaces behind opaque doors, such as interiors of cabinets, shelves, dividers, interiors and sides of drawers, and interior faces of doors. Tops of cases 78 inches or more above floor are defined as semi-exposed.
- D. Concealed Portions of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, and ends and backs that are placed directly against walls or other cabinets.
- E. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive, and faced both front and back with hardwood veneers.

1.4 SUBMITTALS

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

- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.
- C. Samples for Verification: Accompanying the Shop Drawings, submit Samples of pulls, full range of standard high pressure laminate colors, and full range of standard PVC edging colors for selections by the Architect.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain manufactured wood casework from single source from single manufacturer.
- B. Product Designations: Drawings indicate sizes, configurations, and finish material of manufactured wood casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish material, and complying with the Specifications may be considered.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver manufactured wood casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in 1.7 "Project Conditions" below.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install manufactured wood casework until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with manufactured wood casework by field measurements before fabrication.

1.8 COORDINATION

- A. Coordinate layout and installation of framing and reinforcements in walls and partitions for support of manufactured wood casework.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of manufactured wood casework that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Delamination of components or other failures of glue bond.
 - b. Warping of components.

- c. Failure of operating hardware.
- d. Deterioration of finishes.
- 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Stevens Advantage Furnishings, or comparable product by one of the following: (Drawings indicate product numbers of Case Systems Inc.)
 - 1. Plastic-Laminate-Faced Manufactured Casework:
 - a. Case Systems.
 - b. Mastercraft Woodworking Company, Inc.
 - c. TMI Systems Casework
 - d. American Millwork

2.2 MATERIALS, GENERAL

- A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
- B. Hardwood Plywood: HPVA HP-1, either veneer core or particleboard core unless otherwise indicated.
- C. Softwood Plywood: DOC PS 1.
- D. Particleboard: ANSI A208.1, Grade M-2. 47 pound density, balanced three ply construction.
- E. Hardboard: AHA A135.4, Class 1 Tempered.
- F. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
 - 1. 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:
 - a. Wilsonart
 - b. Nevamar Company, LLC; Decorative Products Div.
 - c. Arborite; Div. of Wilsonart International
- G. Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
- H. Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 3 mm thick at doors and drawer fronts, 1 mm thick elsewhere.
- I. Edgebanding for Thermoset Decorative Panels: PVC or polyester edge banding complying with LMA EDG-1 and matching thermoset decorative panels.
- J. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, suitable for exposed applications.

2.3 CABINET MATERIALS

- A. Exposed Cabinet Materials:
 - 1. Plastic Laminate: Grade HGS.
 - 2. Unless otherwise indicated, provide specified edgebanding on all exposed edges.
- B. Semiexposed Cabinet Materials:
 - 1. Plastic Laminate: Grade VGS.
 - a. Provide plastic laminate for semiexposed surfaces unless otherwise indicated.
 - b. Provide plastic laminate for interior faces of doors and drawer fronts and where indicated.
 - 2. Thermoset Decorative Panels: Provide thermoset decorative panels for semiexposed surfaces unless otherwise indicated.
 - 3. Metal for Steel Drawer Pans: Cold-rolled, steel sheet.
 - 4. Unless otherwise indicated, provide specified edgebanding on all semiexposed edges.
- C. Concealed Cabinet Materials:
 - 1. Solid Wood: Any hardwood or softwood species, with no defects affecting strength or utility.
 - 2. Plywood: Hardwood plywood. Provide backs of same species as faces.
 - 3. Plastic Laminate: Grade BKL.

2.4 DESIGN, COLOR, AND FINISH

- A. Design: Provide manufactured wood casework of the following design:
 - 1. Flush overlay with wire pulls.
- B. Thermoset Decorative Panel Colors, Patterns, and Finishes: As selected by Architect from casework manufacturer's full range
- C. Plastic-Laminate Colors, Patterns, and Finishes: As selected by Architect from plastic-laminate manufacturer's full range of colors and patterns
- D. PVC Edgebanding Color: As selected by architect. See drawings.

2.5 CABINET FABRICATION

- A. Plastic-Laminate-Faced Cabinet Construction: As required by referenced quality standard, but not less than the following:
 - 1. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch particleboard, plastic-laminate faced on exposed surfaces, thermoset decorative panels on semiexposed surfaces. Solid sub top.
 - 2. Shelves: 3/4-inch plywood to 27 inches wide, 1 inch thick over 27 inches wide and at open cabinets, reversible, edged on front only.
 - 3. Backs of Cabinets: 1/2-inch particleboard, plastic-laminate faced
 - 4. Base Cabinet Subtops: 3/4-inch panel product glued and pinned or screwed
 - 5. Drawer Fronts: 3/4-inch particleboard, plastic-laminate faced.
 - 6. Drawer Sides and Backs: 1/2-inch solid-wood or veneer-core hardwood plywood, with glued dovetail or multiple-dowel joints.

- 7. Drawer Bottoms: 1/4-inch hardwood plywood glued and dadoed into front, back, and sides of drawers.
- 8. Doors: 3/4-inch particleboard, plastic-laminate faced.
- B. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets.
- C. Fabricate design to comply with the requirements of the American with Disabilities Handbook – EEOC-BK-19, dated October 1992, and Appendix B-ADA Accessibility Guidelines, except where the height of cabinets is noted otherwise on the Drawings.

2.6 CASEWORK HARDWARE AND ACCESSORIES

- A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard commercial-quality, heavy-duty hardware.
 - 1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.
- B. Butt Hinges: Solid aluminum, with clear anodized finish, semiconcealed, 5-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide 2 hinges for doors less than 48 inches high and 3 hinges for doors more than 48 inches high.
- C. Frameless Concealed Hinges (European Type): BHMA A156.9, Type B01602, 170 degrees of opening, self-closing.
- D. Pulls: Solid aluminum wire pulls, with clear anodized finish, fastened from back with two screws. For sliding doors, provide recessed chrome-plated flush pulls. Provide 2 pulls for drawers more than 24 inches wide.
- E. Door Catches: Powder-coated dual, self-aligning, permanent magnet catch. Provide 2 catches on doors more than 48 inches high.
- F. Drawer Slides: BHMA A156.9, Type B05091.
 - 1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated, steel ball-bearing slides.
- G. Label Holders: Chrome plated, sized to receive standard label cards approximately 1 by 2 inches, attached with screws or brads.
 - 1. Provide label holders where indicated.
- H. Drawer and Hinged Door Locks: Cam type, 5-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1.
 - 1. Provide a minimum of two keys per lock and six master keys.
 - 2. Provide locks on doors and drawers specified on casework schedule and elevations. See drawings. Key locks alike in each room and master keyed throughout the building.
- I. Adjustable Shelf Supports: 2-pin locking plastic shelf rests complying with BHMA A156.9, Type B04013, 300 pound load rating per support.

J. Grommets for Cable Passage through Countertops: 2-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.

2.7 COUNTERTOPS

- A. Countertops, General: Provide countertops as one continuous piece wherever possible. Minimize seams to greatest extent possible. Provide smooth, clean exposed tops and edges in uniform plane free of defects. Provide front and end overhang of 1 inch over base cabinets. Provide 45 degree 1"x1" outside corners at all countertops.
- B. Plastic-Laminate Tops: Plastic-laminate sheet, shop bonded to both sides of 1 inch thick particleboard. Sand surfaces to which plastic laminate is to be bonded.
 - 1. Plastic Laminate for Flat Tops: Grade HGS, 0.050 inch thick
 - 2. Plastic Laminate for Backing: Grade BKL.
 - 3. Provide plastic-laminate edgings of the same material as top on front edge of top, on top edges of backsplashes and end splashes, and on ends of tops and splashes.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of manufactured wood casework.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPERATION

- A. Coordinate with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
- B. Plumbing Contractor will furnish templates for all cut-outs in countertops and cabinets where sinks and associated items will be installed.
- C. Take necessary measurements in the field to assure proper fit of shop fabricated items.
- C. Prior to start of installation verify that the work of other trades is sufficiently complete to properly permit this installation to proceed.

3.3 CASEWORK INSTALLATION

- A. Install level, plumb, and true; shim as required, using concealed shims. Where manufactured wood casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Fasten cabinets to masonry or framing, wood blocking, or reinforcements in walls and partitions

with fasteners spaced 24 inches o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.

1. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 16 inches o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than two fasteners.

- C. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, or framing, blocking, or reinforcements in walls or partitions. Align similar adjoining doors to a tolerance of 1/16 inch.
1. Revise requirements in seven subparagraphs below as necessary for seismic restraint of cabinets.
 2. Fasten through back, near top and bottom, at ends, and not more than 16 inches o.c.
 3. Use toggle bolts at hollow masonry.
 4. Use expansion anchors at solid masonry.
 5. Use No. 10 wafer-head screws sized for 1-inch penetration at wood hanging strips.
 6. Use No. 10 wafer-head screws sized for 1-inch penetration into wood framing or blocking at wood-framed partitions.
 7. Use No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish at metal-framed partitions.
 8. Use toggle bolts at plaster on metal lath.
- D. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- E. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.4 INSTALLATION OF TOPS

- A. Field Jointing: Where possible make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- B. Secure tops to cabinets with Z- or L-type fasteners or equivalent, using two or more fasteners at each front, end, and back.
- C. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection. Secure backsplashes and end splashes to walls with adhesive.
- D. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.5 ADJUSTING

- A. Adjust casework and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.6 CLEANING AND PROTECTING

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Protection: Provide 6-mil plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at a minimum of 48 inches o.c. Remove protection at Substantial Completion.

END OF SECTION

SECTION 123600 - SOLID SURFACE COUNTERTOPS

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. Solid surface material countertops.
 - 2. Solid surface material backsplashes.
 - 3. Solid surface material end splashes.
 - 4. Solid surface material apron fronts.
- B. Related Requirements:
 - 1. Division 22 " Plumbing " for and plumbing fittings.

1.3 ACTION SUBMITTALS

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
 - 1. Show locations and details of joints.
 - 2. Show direction of directional pattern, if any.
 - 3. Details shall be produced in 1/2-inch scale minimum for all fabricated items
- C. Samples for Verification: For the following products:
 - 1. Countertop material, 6 inches square.
 - 2. Wood trim, 8 inches long.
 - 3. One full-size solid surface material countertop, with front edge and backsplash, 8 by 10 inches, of construction and in configuration specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of countertops.
- C. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for fabrication and execution.
 - 1. Build mockup of typical countertop as shown on Drawings.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.8 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver no components to project site until areas are ready for installation
- B. Store components indoors prior to installation.
- C. Handle materials to prevent damage to finished surfaces.
 - 1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.10 WARRANTY

- A. Provide manufacturer's warranty against defects in materials.

1. Warranty shall provide material and labor to repair or replace defective materials.
 2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.
 3. Warranty shall be transferable to subsequent owner for remainder of warranty period.
- B. Manufacturer's warranty period
1. Ten years from date of substantial completion

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Formica Corporation.
 - b. Wilsonart LLC.
 - c. Nevamar
 2. Basis of design:
 - a. As indicated on drawings – Design Summary Selection
 3. Type: Provide Standard unless Special Purpose type is indicated.
 4. Integral Sink Bowls: Comply with CSA B45.5/IAPMO Z124.
 5. Colors and Patterns: as per drawings.
- B. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
- C. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.2 COUNTERTOP FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
1. Grade: Premium .
- B. Countertops: 1/2-inch- thick, solid surface material with front edge built up with same material.
- C. Backsplashes: 1/2-inch- thick, solid surface material.
- D. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
1. Fabricate with loose backsplashes for field assembly.
- E. Joints: Fabricate countertops in sections for joining in field.

1. Joint Locations: Not within 18 inches of a sink or cooktop and not where a countertop section less than 36 inches long would result, unless unavoidable.
2. Splined Joints: Accurately cut kerfs in edges at joints for insertion of metal splines to maintain alignment of surfaces at joints. Make width of cuts slightly more than thickness of splines to provide snug fit. Provide at least three splines in each joint.

F. Cutouts and Holes:

1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.

2.3 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer.
1. Verify adhesives have a VOC content of 70 g/L or less.
 2. Verify adhesive complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.
- B. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- C. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

- D. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
 - 1. Install metal splines in kerfs in countertop edges at joints. Fill kerfs with adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.
 - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- E. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- F. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.
- G. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
 - 1. Seal edges of cutouts in particleboard subtops by saturating with varnish.
- H. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION

SECTION 125500 - DETENTION FURNITURE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interview Tables.
 - 2. Processing Benches.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, and attachment details.
- C. Samples: For factory-applied color finishes.

1.3 INFORMATIONAL SUBMITTALS

- A. Anchor inspection reports.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Kryptomax, a Division of G2 Automated Technologies, LLC.
 - 2. Norix Group, Inc.
 - 3. Mega Jailhouse, DBA for Direct Sell Group, LLC.

2.2 INTERVIEW TABLE (EQ-18)

- A. Fully welded construction stainless steel table with welded restraint rings.
 - 1. Table Top: 16 Gauge Type 304 Stainless Steel Top Welded to Frame.
 - 2. Table Base: 16 Gauge Type 304 Stainless Steel 1.5" x 1.5" square tubing.

- a. Provide welded bot-to-floor leveling foot flanges for secure floor mounting.
- 3. Size: Minimum 30 inches wide by 48 inches length by 30 inches high.

B. Materials:

- 1. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- 2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, CS (Commercial Steel), Type B; suitable for exposed applications.
- 3. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, CS (Commercial Steel), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- 4. Stainless Steel Sheet, Strip, Plate, and Flat Bars: ASTM A666 or ASTM A240/A240M, austenitic stainless steel, Type 304.
- 5. Steel Tubing: ASTM A513/A513M, Type B unless otherwise indicated; thickness indicated or required by structural loads.

C. Finishes: Stainless Steel Finish: No. 4. Brushed finish.

D. Basis of Design: Refer to Equipment Schedule on Drawings.

2.3 PROCESSING BENCH (EQ-19)

A. Wall mounted stainless steel bench with secured restraint rings.

- 1. Bench: One-piece, fully welded 12 Gauge Type 304 Stainless Steel with a 1-1/2-inch flange and pre-drilled mounting holes.
- 2. Restraint Rings: Stainless Steel 3/8" rod, solidly welded to bench front.
- 3. Size: Minimum 30 inches deep by width as indicated on Drawings and verified in field.

B. Materials:

- 1. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- 2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, CS (Commercial Steel), Type B; suitable for exposed applications.
- 3. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, CS (Commercial Steel), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- 4. Stainless Steel Sheet, Strip, Plate, and Flat Bars: ASTM A666 or ASTM A240/A240M, austenitic stainless steel, Type 304.
- 5. Steel Tubing: ASTM A513/A513M, Type B unless otherwise indicated; thickness indicated or required by structural loads.

C. Finishes: Stainless Steel Finish: No. 3. Brushed finish.

D. Basis of Design: Refer to Equipment Schedule on Drawings.

2.4 FABRICATION

A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly.

- B. Coordinate dimensions and attachment methods of detention furniture with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.
- C. Shear and punch metals cleanly and accurately. Remove burrs.
- D. Form and grind edges and corners to be free of sharp edges or rough areas.
- E. Form metal in maximum lengths to minimize joints. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.
- F. Weld corners and seams continuously to comply with referenced AWS standard.
- G. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure detention furniture rigidly in place and to support expected loads.
- H. Cut, reinforce, drill, and tap detention furniture as indicated to receive hardware, security fasteners, and similar items.
- I. Form exposed work true to line and level with accurate angles, surfaces, and straight sharp edges.
- J. Form exposed connections with hairline joints, flush and smooth using concealed fasteners where possible.

2.5 SECURITY FASTENERS

- A. Operable only by tools produced by fastener manufacturer or other licensed fabricator for use on specific type of fastener.

2.6 SECURITY SEALANTS

- A. Polyurethane Security Sealants: Manufacturer's standard, nonsag, tamper-resistant sealant for joints with low movement.
- B. Epoxy Security Sealants: Manufacturer's standard, non-sag, tamper-resistant sealant for joints with no movement.

2.7 ACCESSORIES

- A. Concealed Bolts: ASTM A307, Grade A unless otherwise indicated.
- B. Cast-in-Place Anchors in Concrete: Fabricated from corrosion-resistant materials capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing per ASTM E488/E488M, conducted by a qualified testing agency; of type indicated below:

1. Threaded or wedge type; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed; hot-dip galvanized per ASTM A153/A153M or ASTM F2329/F2329M.
- C. Embedded Plate Anchors: Fabricated from mild steel shapes and plates, minimum 3/16 inch thick; with minimum 1/2-inch-diameter, headed studs welded to back of plate.
- D. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Inspect built-in and cast-in anchor installations, before installing detention furniture, to verify that anchor installations comply with requirements. Prepare inspection reports.
- B. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing detention furniture to in-place construction. Include threaded fasteners for concrete and masonry inserts, security fasteners, and other connectors.
- C. Cutting, Fitting, and Placement: Obtain manufacturer's written approval for cutting, drilling, and fitting required for installing detention furniture. Set detention furniture accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry or similar construction.
- E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
- F. Field Welding: Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
- G. Assemble detention furniture requiring field assembly with security fasteners with no exposed fasteners on exposed faces and frames.
- H. Anchor furniture with security fasteners to floors and walls at intervals required by expected loads, but not more than 12 inches o.c.
 1. Install anchors through backup reinforcing plates where necessary to avoid metal distortion.
 2. Use security fasteners with head styles appropriate for installation requirements, strength, and finish of adjacent materials, except that a maximum of two different sets of tools shall be required to operate security fasteners for Project.
 3. Weld nuts onto cast-in-place anchors after installation so as to be nonremovable.

- I. Apply polyurethane security sealant at all exposed gaps between detention furniture and adjacent construction greater than 1/16 inch.

3.2 FIELD QUALITY CONTROL

- A. Inspect installed products to verify compliance with requirements. Prepare inspection reports and indicate compliance with and deviations from the Contract Documents.

END OF SECTION

SECTION 133418 - ENGINEERED POST FRAME BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Engineered wood-framed structures consisting of the following components:
 - a. Factory-engineered wall columns.
 - b. Factory-engineered roof truss.
 - c. Factory-engineered metal roof and wall panels.
 - d. Factory-engineered building system accessories including doors and windows.
 - e. Prefinished metal trim items.
 - f. Prefinished ridge vents and soffits.
 - g. Roof and Wall Insulation

1.2 REFERENCES

A. Reference Standards:

1. Preservative Treated Lumber:
 - a. American Wood Preservers Association (AWPA).
2. Lumber grading rules and wood species:
 - a. National Design Specifications for Wood Construction, current edition.
 - b. Northeastern Lumber Manufacturer's Association, Inc. (NELMA).
 - c. Southern Pine Inspection Bureau (SPIB): Southern Pine.
 - d. West Coast Lumber Inspection Bureau (WCLIB): Douglas Fir.
 - e. Western Wood Products Association (WWPA): Douglas Fir and Ponderosa Pine.
3. MSR Lumber Producers Council (MSR) for machine stress rated lumber.
4. National Design Specifications for Wood Construction.
5. National Design Standard for Metal Plate Connected Wood Truss Construction (TPI).

1.3 ACTION SUBMITTALS

- ##### A. Product Data:
- For each type of process and factory-engineered product. Indicate component materials, dimensions, profiles, and construction and installation details.
1. Include information for specialty accessory products specified for this Project.
 2. 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.
 3. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to truss fabricator.
 4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- ##### B. Shop Drawings:
- Include plans, elevations, sections, details, and attachments to other work.
1. Sizes, stress grades, and species of lumber.
 2. Anchor-bolt layout.
 3. Structural Framing Drawings: Show complete fabrication of primary and secondary framing. Include provisions for openings and the following information:
 - a. Slope or depth, span, and spacing of truss.

- b. Heel bearing height.
 - c. Design loading to include:
 - 1) Top chord live load.
 - 2) Top chord dead load.
 - 3) Bottom chord dead load.
 - 4) Concentrated loads and their points.
 - d. Adjustments to lumber and plate design values for conditions of use.
 - e. Plate type, thickness of gauge, and size.
 - f. Lumber size, species and grade for each member.
4. Metal Roof and Wall Panel Layout Drawings: Show layouts of metal panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, trim, flashings, closures, and special details. Indicate the following components:
- a. Roof mounted items.
 - b. Wall mounted items.
5. Structural Engineer Certification: Letter signed by a Professional/Structural Engineer, registered to practice in the jurisdiction of the project, verifying compliance with Snow Design Requirements. Letter shall reference specific dead loads, live loads, wind loads, tributary area load reductions (if applicable) collateral loads, seismic loads, end use categories, and governing building code including edition and load applications. Submit Shop Drawings that have been engineered and certified by professional engineer licensed in the State in which Project is located. Include seal and signature of professional engineer on Shop Drawings.
- C. Design Data: Truss engineering calculations for loading and stresses, bearing seal and signature of professional engineer licensed in the State in which Project is located. Include the following calculations:
- 1. Minimum design shall meet design standards of latest edition of International Building Code unless other, more stringent requirements are in force in Project location.
 - 2. Bending moments and axial forces for each member.
 - 3. Basic plate design values.
 - 4. Design analysis for each joint indicating that proper plates have been used.
 - 5. Provide design calculations for exterior walls, canopies, soffit systems, and lateral bracing walls. Design wind loads and lateral bracing loads are indicated on structural Drawings.
 - 6. Submit design calculations that have been engineered and certified by professional engineer licensed in the State in which Project is located. Include seal and signature of professional engineer on calculations
- D. Samples for Initial Selection: For units with factory-applied color finish, color chart of manufacturer's standard colors. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- 1.4 INFORMATIONAL SUBMITTALS
- A. Evaluation Reports: For the following, from ICC-ES:
- 1. Wood-preservative-treated wood.
 - 2. Engineered wood products.

- B. Quality Control Submittals:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics.
 - 2. Certification: Manufacturer's certification that Products furnished meet specified design and performance criteria.
 - C. Submit written proof of third party inspection program in force for truss manufacturer used on Project.
 - D. Certifications: Certify that specified roof and wind load requirements are met.
- 1.5 QUALITY ASSURANCE
- Manufacturer Qualifications: Manufacturer with minimum 5 years' documented experience that participates and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- 1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
 - 2. Manufacturer shall have engineering department.
 - 3. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by qualified professional engineer.
- B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.
 - C. Source Limitations: Obtain engineered post frame building components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Handle and store materials per manufacturer's requirements.
 - B. Handle and store trusses to comply with recommendations in TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."
 - 1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
 - 2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
 - 3. Provide for air circulation around stacks and under coverings.
 - 4. Store trusses to avoid contact with other materials that could create staining or discoloration.
 - C. Inspect trusses upon deliver to Project site and notify manufacturer immediately if members have damage from handling or show discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.
- 1.7 WARRANTY
- A. Manufacturer's Special Warranty – Treated Material: Manufacturer agrees to repair, restore, or replace columns that fail in materials within specified warranty period.
 - 1. Warranty Period: 50 years from date of Substantial Completion.
 - 2. Manufacturer shall repair treated structural columns that fail because of insect damage or because of decay that occurs under normal conditions and proper use. If manufacturer is

not able to repair structural posts to satisfaction of Architect and Owner, manufacturer shall replace damaged treated structural columns.

- B. Special Warranty on Metal Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Roofing and Siding Finish, steel panel: Warranted by the original materials manufacturer for 40 years from the date of shipment. Refer to Warranty document for complete details.
 - 2. Finish Warranty Period: From date of Substantial Completion, 40 years on chalk; 30 years on color change:
 - 3. Individual Building Products: Manufacturer's standard warranty.
 - 4. Installation Warranty: One year general installation warranty, five years against roof leaks.
 - 5. Manufacturer shall repair painted steel roofing or siding panels if the paint peels, cracks, checks, flakes or blisters to an extent that is apparent by ordinary outdoor visual observation when exposed to normal weather and atmospheric conditions. If manufacturer is not able to repair steel panels to satisfaction of Architect and Owner, manufacturer shall replace damaged steel panels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Product: Subject to compliance with requirements. Hanson Pole Buildings, LLC Company or comparable product by one of the following:
 - 1. Timbertech Eng. Inc.
 - 2. Energy Panel Structures
 - 3. Lester Building Systems
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE CRITERIA

- A. Design Requirements:
 - 1. Design wood members per formulas published in National Design Specifications (NDS) for Wood Construction.
 - 2. Design light meta-toothed connector plates and joint design in compliance with Truss Plate Institute's (TPI) National Design Standard for Metal Plate Connected Wood Truss Construction.
 - 3. Include unbalanced roof loads required by ASCE-7, current edition.

2.3 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing

- no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
 - 2. For exposed items indicated to receive stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
 - B. Maximum moisture content of 19 percent or per appropriate grading rules. Do not use material that is warped or does not comply with requirements for untreated material.
 - C. Mark lumber with treatment quality mark of inspection agency approved by ALSC Board of Review.
 - D. Application: Treat items indicated on Drawings, and the following:
 - 1. Laminated columns.
 - 2. Baseboards.
 - 3. Hold down blocks.
- 2.4 STRUCTURAL
- A. Footings:
 - 1. Embedded Column Footings:
 - a. Precast 8" by 30" inch diameter 4000 psi concrete footing pad.
 - B. Primary Framing:
 - 1. Columns:
 - a. Treated Lumber Section:
 - 1) Lumber: No. 1 or Better Southern Yellow Pine, pressure treated with Chromated Copper Arsenate, Type III, to a retention of 0.6 pcf (9.6 kg/m³) and kiln dried after treating to 19 percent maximum moisture content.
 - 2) Fabrication: Laminate individual pieces using ring shank feed nails per manufacturer's engineered nailing pattern. Fasteners shall have ASTM A153 galvanizing.
 - b. Untreated Lumber Section:
 - 1) Lumber: Lumber: No. 1 or Better Southern Yellow Pine or Douglas Fir-Larch or other equivalent NDS approved species/grade kiln dried to 19 percent maximum moisture content.
 - 2) Fabrication: Laminate individual pieces using ring shank feed nails per manufacturer's engineered nailing pattern.
 - 3) Grade and size shall be selected to support imposed loads within deflection limits.
 - c. End Joint Connection of Treated and Untreated Sections: Factory fabricated finger joint.
 - d. Configuration:
 - 1) Sidewall and Endwall Columns: 3 ply or 4 ply combining 2x4, 2x6, 2x8, or 2x10 (50x150, 50x200, 50x250 mm) dimension lumber as required by "Structural Design" requirements specified herein.
 - 2) Corner Columns: 2 ply or 3 ply 2x4, 2x6 or 2x8 (50x150, 50x200 mm) dimension lumber as required by "Structural Design" requirements specified herein.
 - e. Embedded Column Anchorage:
 - 1) Anchor blocks factory adhered to column base.
 - 2) Concrete collar pinned to column base with steel reinforcing rods.

2. Trusses: Comply with "Structural Design" and "Quality Assurance" requirements as specified herein.
 - a. Comply with TPI "Design Specification for Metal Plate Connected Wood Trusses" and "Quality Standard for Metal Plate Connected Wood Trusses."
 - b. Manufacturer shall have a third party inspection program to verify compliance with requirements of TPI.
 - c. Stamp trusses with inspection agency identification
 - C. Secondary Framing:
 1. Purlins and Girts:
 - a. Lumber: No. 2 or Better dimension lumber kiln dried to 19 percent maximum moisture content.
 - b. Configuration: 2x4 or 2x6 or 2x8 (50x100, 50x150, 50x200 mm) as required by "Structural Design" requirements specified herein.
 - 1) Girts: Size, grade and spacing to meet wind and deflection criterion.
 - Face mounted to exterior side of column.
 - 2) Purlins: Precision cut to fit between trusses flush with top of top chord. Provide 20 gauge galvanized purlin saddle hangers.
 - c. Spacing: As required by "Structural Design" requirements specified herein.
 2. Splashplank:
 - a. Lumber: No. 2 or Better Southern Yellow Pine, preservative treated, to a retention of 14 pcf (2.2 kg/m³) of micronized copper azole.
 - b. Configuration: 2x6 or 2x8 (50x 150 or 50x200 mm) dimension lumber. Milled S4S for single row and milled T&G for multiple rows.
 3. Bracing, Wall and Lateral Truss Type (where required by "Structural Design"):
 - a. Lumber: No. 2 or Better dimension lumber.
 - b. Configuration:
 - D. 2x4 or 2x6 (50x100, 50x150 mm) as required by "Structural Design" requirements specified herein. Overhang Framing: Fabricated rafter frames.
 1. Provide factory beveled fascia boards, 2 inch by 6 inch Spruce-pine-fir, No. 2.
 - E. Wind Bracing:
 1. 2 inch by 6 inch, No. 2 or better Spruce-pine-fir from end wall column to first truss back.
 2. 2 inch by 4 inch diagonal in roofline bracing as required by design.
 - F. Framing Around Openings:
 1. Provide 2 inch by 6 inch/2 inch by 4 inch No. 2 around door, window, and overhead sectional door openings.
 - G. Headers: Provide built-up No. 1 or better Southern yellow pine headers as required to meet loading designs.
 - H. Incidental Framing: No.2 or better 2 inch by 4 inch.
- 2.5 MATERIALS – PREFINISHED MATERIALS
- A. General: Factory-formed metal panels, 29 gauge roll-formed in manufacturer's facility, designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weathertight

installation.

- B. Metal Panels: Exposed-fastener metal roof and wall panels, formed with raised ribs and recesses. Wall panels to have factory applied anti-graffiti coating.
1. Configuration:
 - a. Roll-formed; 36 inch (915 mm) coverage width. Provide panels covering up to 35 foot (10.5 m) lengths in single pieces.
 - b. Four major corrugations, 7/8 inch (22 mm) high, spaced 12 inches (305 mm) on center with 3 minor corrugations, 1/8 inch (3 mm) high, spaced 3 inches (76 mm) on center between each major corrugation.
 - c. Form one outboard corrugation as overlapping corrugation.
 - d. Form opposite outboard corrugation as underneath corrugation with full return leg to support side lap and a continuous anti-siphon drain channel.
 - e. Factory cut to required length.
 - f. Factory miter cut gable ends.
 - g. Material and Finish: As shown on Erection Drawings, except as specified herein.
 - h. Fasteners: Color coated No. 10 piercing screws with 1/4 inch (6 mm) hex head pre-assembled to 1/2 inch (13 mm) O.D. dome seal or bond seal galvanized steel and EPDM washers.
- C. Wainscoting: 36 inch high accent feature from at base of building, consisting of the following material:
Steel panel matching specified wall panels; color to be selected by architect.
- D. Metal Trim: Match material. Color selected by architect manufacturer Full Range. Provide trim for corners, ridge lines, rakes, eaves, and panel bases.
1. Lengths: Minimum 10 feet .
 2. Trim, overhang facias, track covers, and slide door jambs available in building panel covers.
 3. Overhead Sectional Door and Slide Door Jamb Trim: Fabricated from 1 piece up to 10 feet in length.
- E. Soffits: Aluminum or steel, vented as required. Color selected by architect manufacturer Full Range.
- F. Ridge Vent: Manufacturer's standard pre-engineered ridge cap or ridgelite, flashings, and eave and gable trim. Field-fabricate minor flashings as indicated on approved Shop Drawings.
1. Provide manufacturer's vent as indicated on Drawings
- G. Eave Overhang Fascia Flashing:
1. Size: 24 inches nominal.
 2. Fascia Flashing Color: Color selected by architect manufacturer Full Range.
 3. Vented Soffit Color: Color selected by architect manufacturer Full Range.
- H. Gutters and Downspouts: Provide manufacturer's standard gutters and downspouts as shown on Drawings.
- I. Material and Finish: 29 gauge steel, coated both sides
1. Exterior Surface Finish: Bonderize and provide baked-on primer and Valspar Weather-XL (silicone modified polyester) finish coat, 0.7 - 0.8 mil minimum dry film thickness.
 2. Exterior Surface Finish: Bonderize and provide baked-on primer and factory applied baked-on 70 percent Kynar 500 or Hylar 5000 PVDF fluoropolymer resin based paint coating manufactured by Valspar, with a minimum dry film thickness of 0.7 - 0.8 mil..

2.6 RELATED MATERIALS

- A. Insulation: Where indicated on Drawings, provide one or more of the following insulation types.
- B. Polypropylene-Scrim-Kraft-Faced, Glass-Fiber Blanket Insulation: ASTM C665, Type II, Class A; Category 1, with 4 mil white, high density polyethylene facing.
 - 1. Acceptable Product: Tuff-Roll Insulation.
 - 2. Surface Burning Characteristics per ASTM E84:
 - a. Flame Spread: 25.
 - b. Smoke Developed: <50.
 - 3. Thermal Resistance and Thickness: as indicated in drawings.
 - 4. Physical Properties:
 - a. Water Vapor Transmission, ASTM E96: 0.015 perms.
 - b. Light Reflectivity, ASTM C 523, Illuminant D-6500: 90 percent.
- C. Walk Doors: Where indicated on Drawings, provide the following type of doors:
 - 1. Steel or extruded aluminum frame and sash with electrostatically coated enamel paint finish and window manufacturer's standard single pane glass or insulated glass unit, and locking options based on Project requirements.
- D. Windows: Where indicated on Drawings, provide the following type of windows:
 - 1. Thermally insulated extruded aluminum frame and sash with electrostatically coated enamel paint finish and window manufacturer's standard insulated glass units.
- E. Closure Strips: Closed cell, 2 psf density polyethylene foam, premolded to match configuration of panels.

2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153.
 - 2. Exposed Fastener Heads: Match color of steel panel.
 - 3. Where steel panels or trim is attached to preservative-treated lumber, provide fasteners of unpainted Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F1667.
 - 1. Framing Lumber: 10d, 16d and 60d ring shank nails.
 - 2. Machine Bolts: Minimum grade 1, A307.
 - 3. Metal Panels: Minimum 1-1/2 inch No. 10 screw fasteners with EPDM sealing washers bearing on weather side of metal panels.
 - a. Match color of metal panels.

2.8 FABRICATION

- A. Shop-fabricate wood trusses in TPI inspected plant.
- B. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- C. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

- D. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
Fabricate wood trusses within manufacturing tolerances in TPI 1.
- E. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedment to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.
 - 1. Engage land surveyor to perform surveying.
Proceed with erection only after unsatisfactory conditions have been corrected

3.2 PREPARATION

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

ERECTION OF FRAMING

- A. General: Do not use materials that are unsound, warped, improperly finished, or with defective surfaces, sizes, or patterns.
 - 1. Comply with frame manufacturer's approved Shop Drawings for details and building erection.
 - 2. Comply with NFBA document "Accepted Practices for Post-frame Construction Framing Tolerances."
- B. Columns:
 - 1. Auger hole to depth of diameter indicated on Drawings.
 - 2. Pour ready mix concrete pad in bottom of each hole per Drawings.
 - 3. Install hold down blocks at bottom of each column per approved Shop Drawings.
 - 4. Accurately position column in hole.
 - 5. Backfill with dry soil compacted in 8 inch lifts.
- C. Baseboards: as noted in manufacturers drawings.
- D. Wall Girts: Install at centers indicated on Drawings.
 - 1. If required, install overhang framing at top of wall girts.
- E. Trusses:
 - 1. Set trusses in place in center of column using lifting methods as approved by manufacturer.

- 2. When trusses are properly positioned, install 1/2 inch by 5-1/2 inch machine bolt and manufacturer recommended 20d ring shank nails through 2 of column laminates and truss heel.
 - 3. Brace trusses per WTCA guidelines and BCSI Manual
 - F. Purlins: Install purlins with fasteners and at spacings per approved Shop Drawings.
 - G. Truss Ties: Install truss ties at locations recommended by structure manufacture and per approved Shop Drawings
 - 1. Run truss ties from end wall to end wall.
 - H. Incidental Framing: Install 2 inch by 4 inch or 2 inch by 6 inch blocking as required per structure manufacturers recommendations.
- 3.3 METAL PANEL INSTALLATION, GENERAL
- A. Install metal panels per manufacturer's established construction procedures.
 - B. Install metal panels and components plumb, square, straight, and true to lines, and to assure freedom from rattles.
 - C. Take care when cutting prefinished materials to ensure cuttings do not remain on finished surface.
 - D. Properly install fasteners taking care to not under- or overdrive.

END OF SECTION

SECTION 133419 - ENGINEERED CARPORT STRUCTURES

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. Freestanding, pre-engineered steel carport structure.
 - 2. Concrete foundation.
 - 3. Metal roofing panels.
 - 4. Snow guards.
 - 5. Accessories, including gutters and downspouts.
- B. Related Sections:
 - 1. Division 03 Section "Cast-in-place Concrete."
 - 2. Division 05 Section "Metal Fabrications."
 - 3. Division 26 "Electrical" Sections.

1.3 REFERENCES

- A. American Institute of Steel Construction, Inc. (AISC): AISC 360 - Specification for Structural Steel Buildings (copyrighted by AISC, ANSI approved).
- B. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures (copyrighted by ASCE, ANSI approved).
- C. American Welding Society (AWS): AWS D1.1 - Structural Welding Code - Steel (copyrighted by AWS, ANSI approved).
- D. ASTM International (ASTM):
 - 1. ASTM A 36/A 36M - Standard Specification for Structural Steel.
- E. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM MFM - Metal Finishes Manual.

- F. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code (copyrighted by NFPA, ANSI approved) - hereinafter referred to as NEC.

1.4 DEFINITIONS

- A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in referenced standards.

1.5 PERFORMANCE REQUIREMENTS

- A. Roof System Design:
1. Design roof panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
 2. Design roof paneling system to support design live, snow, and wind loads.
 3. Endwall Trim and Roof Transition Flashings: Allow roof panels to move relative to wall panels as roof expands and contracts with temperature changes.
- B. Roof System Performance Requirements:
1. UL Wind Uplift Classification Rating, UL 580: Class 90.
 2. Structural Performance Under Uniform Static Air Pressure Difference: Test roof system in accordance with ASTM E 1592.
 3. FM Global (Factory Mutual):
 - a. Roof system has been tested in accordance with FMRC Standard 4471 and approved as a Class 1 Panel Roof.
 - b. Metal Building System Manufacturer: Provide specific assemblies to meet required wind rating in accordance with FM Global.
 - c. Installation modifications or substitutions can invalidate FM Global approval.
- C. Structural Steel Framing System Design:
1. Design of Structural System: Clear or multi-span rigid frame with tapered or straight columns and roof beams, with gable or single-slope roof.
 - a. Seismic Performance: Metal building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 - 1) Nature of Occupancy: Buildings and other structures.
 - 2) Category: II
 2. Components and Parts of Structural System:
 - a. Erection Drawings: Supply for identification and assembly of parts.
 - b. Drawings: Carry stamp of a registered professional engineer.
 3. Foundations:
 - a. Foundations, Including Anchor Bolt Embedment Length: Properly designed by qualified engineer, retained by other than metal building system manufacturer, in accordance with specific soil conditions for building site.
 - 1) Reactions for Proper Design of Foundations: Supplied by metal building system manufacturer.
 - 2) Anchor Bolts:
 - a) Anchor Bolt Diameter: Indicated on anchor bolt layout drawings furnished by metal building system manufacturer.

- b) Anchor Bolts: Supplied by Contractor, not metal building manufacturer.
 - c) Anchor Bolts on Moment-Resisting Column Bases: Nuts above and below base plates.
4. Structural Steel Design:
- a. Structural Mill Section or Welded-up Plate Sections: Design in accordance with AISC Specifications for Structural Steel Buildings.
 - b. Cold-Formed Steel Structural Members: Design in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
 - c. Structural System: Design in accordance with specified building code (Refer to Design Loads and Building Codes).
- D. Secondary Structural Members Design:
- 1. Purlins:
 - a. Truss Purlins:
 - 1) Cold-formed trusses, factory assembled and welded.
 - 2) 20-1/2 inches or 29-1/2 inches deep.
 - b. Outer Flange of Purlins: Factory-punched holes for panel connections.
 - c. Attach purlins to main frames and endwalls with 1/2-inch diameter bolts.
 - d. Brace purlins at intervals indicated on erection drawings furnished by metal building system manufacturer.
 - e. Concentrated Loads: Hung at purlin panel points.
 - 2. Eave Members:
 - a. Eave Struts: Factory punched 7-inch, 8-1/2-inch, 10-inch, or 11-1/2-inch deep "C" sections, precision-roll-formed, acrylic-coated G30 galvanized steel in different gauges to meet specified loading conditions.
 - 3. Girts:
 - a. "Z" or "C"-shaped, precision-roll-formed, acrylic-coated G30 galvanized steel in different gauges to meet specified loading conditions.
 - b. 7-inch, 8-1/2-inch, 10-inch, or 11-1/2-inch deep "Z" or "C" sections.
 - c. Outer Flange of Girts: Factory-punched holes for panel connections.
 - 4. Bracing:
 - a. Locate bracing as indicated on Drawings.
 - b. Diagonal Bracing:
 - 1) Hot-rolled rods of sizes indicated on the Drawings.
 - 2) Attached to columns and roof beams as indicated on the Drawings.
 - c. Optional fixed-base wind posts or pinned-base portal frames may be substituted for wall rod bracing on building as required.
 - d. Flange Braces and Purlin Braces: Cold formed and installed as indicated on the Drawings.
 - 5. Welding:
 - a. Welding Procedures, Operator Qualifications, and Welding Quality Standards: A W S D1.1 – Structural Welding Code – Steel and A W S D1.3 – Structural Welding Code – Sheet Steel.
 - b. Welding inspection, other than visual inspection as defined by A W S D1.1, paragraph 6.9, shall be identified and negotiated before bidding.
 - c. Certification of Welder Qualification: Supply when requested.

1.6 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets for each product and component to be used, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Submit shop drawings. Include plans, elevations, sections, details, and attachments to other work. Canopy supplier shall furnish complete canopy drawings signed and sealed by a professional engineer licensed in the state where the canopy shall be installed.
- C. Delegated-Design Submittal: For metal building systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Samples for Initial Selection: For units with factory-applied color finish, submit manufacturer color charts showing full range of colors and finishes available.
- E. Samples for Verification: For each type of exposed finish required, prepared on Samples of sizes indicated below:
 - 1. Metal Panels: Nominal 12 inches long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
 - 2. Flashing and Trim: Nominal 12 inches long. Include fasteners and other exposed accessories.
 - 3. Accessories: Nominal 12-inch- long Samples for each type of accessory.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified erector, manufacturer, professional engineer, and testing agency.
- B. Welding certificates.
- C. Certificates: Submit product certificates signed by the manufacturer certifying material compliance with specified performance characteristics and criteria, and physical requirements.
 - 1. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
 - a. Name and location of Project.
 - b. Order number.
 - c. Name of manufacturer.
 - d. Name of Contractor.
 - e. Building dimensions including width, length, height, and roof slope.
 - f. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
 - g. Governing building code and year of edition.
 - h. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).

- i. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
 - j. Building-Use Category: Indicate category of building use and its effect on load importance factors.
- 2. Erector Certificates: For each product, from manufacturer.
- D. Material Test Reports: For each of the following products:
 - 1. Structural steel including chemical and physical properties.
 - 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 3. Tension-control, high-strength, bolt-nut-washer assemblies.
 - 4. Shop primers.
 - 5. Nonshrink grout.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for insulation and vapor-retarder facings. Include reports for thermal resistance, fire-test-response characteristics, water-vapor transmission, and water absorption.
- F. Warranties: Sample of special warranties.

1.8 QUALITY ASSURANCE

- A. Delegated-Design Submittal: For metal building system assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Manufacturer of the metal building system shall be responsible for the following:
 - a. Engineering of the structure.
 - b. Structural integrity of the structure.
 - c. Expansion joints in the structure.
 - d. Gutter and downspout design, calculations, metal thickness, and sizing.
- B. Manufacturer Qualifications: Company specializing in engineering and manufacturing pre-engineered canopies with a minimum documented experience of twenty years and with an in-house quality inspection program not by AISC or other certification program.
 - 1. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.
- C. Welding: Qualify procedures and personnel according to the following:
 - 1. Welding shall be in accordance with AWS D1.1 (with E70XX electrodes).
 - 2. Steel shop connections shall be welded and field connections shall be bolted (unless otherwise noted on the Drawings). Shop welds may be changed to field welds with the approval of the project engineer.
 - 3. Slag shall be cleaned from welds and inspected. Steel shall be painted with red oxide rust-inhibitive primer (unless galvanizing specified).

- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Source Limitations: Obtain pre-engineered metal canopy through one source from a single manufacturer who shall manufacture and install the canopy.
- F. Product Options:
 - 1. Information on the Drawings and in the Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance. Do not modify intended aesthetic effects, as judged solely by the Architect, except with the Architect's approval. If modifications are proposed, submit comprehensive explanatory data to the Architect for review.
 - 2. The Drawings indicate size, profiles, and dimensional requirements of pre-engineered metal canopies and are based on the specific system indicated. Do not modify intended aesthetic effects, as judged solely by the Architect, except with the Architect's approval. If modifications are proposed, submit comprehensive explanatory data to the Architect for review.
- G. Coordination:
 - 1. The Contractor shall conduct site meetings to verify project requirements, substrate conditions, utility connections, manufacturer's drawings and installation instructions. Comply with Division 1 section on project meetings.
 - 2. The contractor shall prepare for and pour the concrete footers for the pre-engineered metal canopies. Manufacturer shall furnish recommended footing drawings as per IBC Section 1807.3 and prints and rebar details for concrete footings, as well as provide anchor bolts to be embedded in concrete footer. Such items shall be delivered to project site in time for installation.
- H. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect components and accessories from corrosion, deformation, damage, and deterioration when stored at job site. Keep materials free from dirt and foreign matter.

1.10 PROJECT CONDITIONS

- A. Field Measurements: The Contractor shall verify location and elevation of footings relative to finished grade, columns, and other construction contiguous with pre-engineered metal canopies by field measurements before fabrication and indicate measurements on shop drawings.

1. Established Dimensions: The Contractor shall, where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating metal canopies without field measurements. Contractor is responsible to coordinate footer locations and elevations with any interferences with or attachments to abutting structures.

1.11 WARRANTY

- A. Special Warranty on Metal Canopy Deck: Manufacturer's standard form in which manufacturer agrees to repair finish or replace canopy deck panels that show 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.
- B. Standard Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products showing defects in materials, integrity or workmanship.
 1. Warranty Period: 1 year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide '2-Column Single' Carport Structures Corporation company 1825 Metamora Rd. Oxford, Michigan 48371, (248)628-5571, or comparable product by one of the following:
 1. Absolute Steel and Storage, LLC.
 2. Nucor Building Systems.
 3. Butler Manufacturing.
 4. Austin Mohawk and Company, Inc.

2.2 MATERIALS

- A. Structural Steel:
 1. Material and work shall conform to the latest AISC 360.
 2. Structural steel shall be hot-dip-galvanized.
- B. Sheet Metal:
 1. Decking: 3 inch by 16 inch by 20 gage smooth white or embossed available, ASTM A 653/A 653M GR40, $F_y = 40$ ksi, galvanized steel with baked enamel finish.

2. Center and Tapered Gutter: 20 gage hot-dip galvanized steel baked enamel finish.
3. Perimeter Gutter: 20 gage hot-dip galvanized steel baked enamel finish.
4. External Downspouts: 3 inch by 4 inch Aluminum in 10' sections

2.3 CARPORT CANOPY STRUCTURE

- A. Description: Provide a complete, integrated set of manufacturer's standard design canopy components to form a pre-engineered canopy ready for installation on project site. Canopy steel framing consists of using stacked wide-flange roof beams which transfer loads to columns. Columns are designed as fixed base elements to transfer vertical & lateral loads and moments to concrete foundations. Columns are typically located in an area of site protected from drive lane traffic. Pre-engineered metal canopy shall be designed to meet all site specific design loads per Section 1.4.A or project specific requirements.
- B. Eave Height: Refer to Drawings.
- C. Bay Spacing: Refer to Drawings; coordinate with civil drawings
- D. Roof Slope: Refer to Drawings.
- E. Roof System: 29 GA. Roll Formed Galvanized Steel, Exposed Fastener Type, Kyner 500 Factory Finish.

2.4 CANOPY STRUCTURE PERFORMANCE

- A. Delegated Design: Design metal building system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."
 1. Design Loads: As required by PA Uniform Construction Code.
 2. Deflection Limits: Design metal building system assemblies to withstand design loads with deflections no greater than the following:
 - a. Purlins and Rafters: Vertical deflection for:
 - 1) Snow Load: $1/240$ of the span, or $3/4$ inch, whichever is less for framing supported ceilings.
 - 2) Total Load: $1/180$ of the span, or 1 inch, whichever is less for framing supported ceilings.
 - 3) Total Load: $1/180$ of the span, or 1-1/4 inch, whichever is less for framing non-supported ceilings.
 - b. Girts: Horizontal deflection of:
 - 1) $1/240$ of the span, or $3/4$ inch, whichever is less for members supporting drywall ceilings.
 - 2) $1/600$ of the span, or 0.3 inches, whichever is less for members supporting masonry veneer finishes.

- 3) As required by window manufacturer.
 - c. Metal Roof Panels: Vertical deflection of $1/180$ of the span.
 - d. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
- 3. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:
 - a. Lateral Drift: Maximum of $1/600$ of the building height.
- 4. Metal panel assemblies shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ASTM E 1592.
- C. Seismic Performance: Metal building systems shall withstand the effects of earthquake motions determined according to PA Uniform Construction Code.
 - 1. Nature of Occupancy: Buildings and other structures.
 - 2. Category: II
- D. Thermal Movements: 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 calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- E. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 at test-pressure difference of 2.86 lbf/sq. ft.
- F. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for Class 90.

2.5 STRUCTURAL-STEEL FRAMING

- A. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.
 - 1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
 - a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.
 - 2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
 - 3. Frame Configuration: Single gable.
 - 4. Exterior Column Type: Uniform depth or tapered, as determined to provide the most economical design, and still meet the requirements indicated.
 - 5. Rafter Type: Uniform depth or tapered, as determined to provide the most economical design, and still meet the requirements indicated.

- B. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:
1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch- wide flanges.
 - a. Depth: As needed to comply with system performance requirements.
 2. Purlins: Steel joists of depths indicated.
 3. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.
- C. Bracing: Provide adjustable wind bracing as follows:
1. Rods: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50; or ASTM A 529/A 529M, Grade 50; minimum 1/2-inch- diameter steel; threaded full length or threaded a minimum of 6 inches at each end.
 2. Cable: ASTM A 475, 1/4-inch- diameter, extra-high-strength grade, Class B, zinc-coated, seven-strand steel; with threaded end anchors.
 3. Angles: Fabricated from structural-steel shapes to match primary framing, of size required to withstand design loads.
 4. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
 5. Fixed-Base Columns: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
 6. Diaphragm Action of Metal Panels: Design metal building to resist wind forces through diaphragm action of metal panels.
 7. Bracing: Provide wind bracing using any method specified above, at manufacturer's option.
- D. Bolts: Provide plain-finish bolts for structural-framing components that are primed or finish painted. Provide hot-dip galvanized bolts for structural-framing components that are galvanized.
- E. Materials:
1. W-Shapes: ASTM A 992/A 992M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
 2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
 3. Plate and Bar: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
 4. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
 5. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.
 6. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70; or cold-rolled, ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70.
 7. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563 heavy-hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

- a. Finish: Plain.
8. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex-head steel structural bolts with spline ends.
 - a. Finish: Plain.
9. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
 - a. Configuration: Straight.
 - b. Nuts: ASTM A 563 heavy-hex carbon steel.
 - c. Plate Washers: ASTM A 36/A 36M carbon steel.
 - d. Washers: ASTM F 436 hardened carbon steel.
 - e. Finish: Plain.
10. Headed Anchor Rods: ASTM F 1554, Grade 36.
 - a. Configuration: Straight.
 - b. Nuts: ASTM A 563 heavy-hex carbon steel.
 - c. Plate Washers: ASTM A 36/A 36M carbon steel.
 - d. Washers: ASTM F 436 hardened carbon steel.
 - e. Finish: Plain.
11. Threaded Rods: ASTM A 193/A 193M.
 - a. Nuts: ASTM A 563 heavy-hex carbon steel.
 - b. Washers: ASTM F 436 hardened carbon steel.
 - c. Finish: Plain.
- F. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.
 1. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil.
 - a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.
 2. Prime galvanized members with specified primer after phosphoric acid pretreatment.
 3. Primer: SSPC-Paint 15, Type I, red oxide.

2.6 SNOW GUARDS

- A. Snow Guards: Provide a bar type snowguard system that employs a flush mount that allows a secure mechanical gripping snowguard to the roofing panel surface. Provide manufacturers continuous aluminum tubing or extruded bar type sections. Tubing or bar sections shall have a 2-inch wide slot, where roofing installer shall slide a piece of metal into the slot, so snowguard matches roof panel color. Provide all stainless steel hardware.
 1. Acceptable Manufacturers: Subject to compliance with requirements and the specifications, acceptable manufacturers whose products may be considered are, but may not be limited to, the following:
 - a. "Colorbar", by SnoBlox – Snojax.
 - b. "S-5! Colorgard" by Alpine Snowguards.

2.7 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
 1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
 2. Clips: Manufacturer's standard, formed from stainless-steel sheet, designed to withstand negative-load requirements.
 3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from stainless-steel sheet or nylon-coated aluminum sheet.
 4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
 6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch standoff; fabricated from extruded polystyrene.
- C. Flashing and Trim: Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match adjacent metal panels.
 1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
 2. Opening Trim: Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.
- D. Gutters: Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
 1. Gutter Supports: Fabricated from same material and finish as gutters.
 - a. Spacing: Manufactures recommended spacing.
 2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.
- E. Downspouts: Formed from 0.022-inch nominal-thickness, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- long sections, complete with formed elbows and offsets.
 1. Mounting Straps: Fabricated from same material and finish as gutters.

F. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.
 - a. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless-steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
 - b. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
 - c. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
4. Metal Panel Sealants:
 - a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
 - b. Joint Sealant: ASTM C 920; one-part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.8 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to evaluate product.
- B. Special Inspector: Owner will engage a qualified special inspector to perform the following tests and inspections and to submit reports. Special inspector will verify that manufacturer maintains detailed fabrication and quality-control procedures and will review the completeness and adequacy of those procedures to perform the Work.
 1. Special inspections will not be required if fabrication is performed by manufacturer registered and approved by authorities having jurisdiction to perform such Work without special inspection.
 - a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.
- C. Testing: Test and inspect shop connections for metal buildings according to the following:
 1. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

2. Welded Connections: In addition to visual inspection, shop-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- D. Product will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

2.9 FABRICATION

- A. General: Design components and field connections required for erection to permit easy assembly.
 1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
 2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.
- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.
- C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
 1. Make shop connections by welding or by using high-strength bolts.
 2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
 3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
 4. Weld clips to frames for attaching secondary framing.
 5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.
- D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
 1. Make shop connections by welding or by using non-high-strength bolts.
 2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

2.10 FINISHING

A. Painting of Structural Steel Framing System:

1. General:
 - a. Structural Steel: Prime paint as temporary protection against ordinary atmospheric conditions.
 - b. Perform subsequent finish painting, if required, in field as specified in the Construction Documents.
 - c. Before painting, clean steel of loose rust, loose mill scale, dirt, and other foreign materials.
 - d. Steel Fabricator: Not required to sand blast, flame clean, or pickle steel before painting, unless otherwise specified.
2. Primary Frames:
 - a. Clean steel in accordance with SSPC-SP2.
 - b. Factory cover steel with one coat of gray water-reducible alkyd primer paint formulated to equal or exceed performance requirements SSPC-Paint 15.
 - c. Minimum Coating Thickness: 1.0 mil.
3. Secondary Structural Members – Roll-Formed:
 - a. Hot-dipped zinc coated, ASTM A 653, G30; followed by one coat of clear acrylic finish.
 - b. Acrylic-Coated G30 Galvanized Steel: Equal or exceed performance requirements of SSPC-Paint 15.
4. Truss Purlins:
 - a. Clean steel in accordance with SSPC-SP2.
 - b. Factory cover steel with one coat of gray primer by spray, dip, or electrodeposition method.
 - c. Minimum Coating Thickness: 1.0 mil.
5. Painting Locations:
 - a. Provide primed finishes on all Structural Members.
 - b. Provide finish painting on exposed primary frames, secondary structural members, truss purlins, and other exposed structural and trim members.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.
 1. Engage land surveyor to perform surveying.
- C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 INSTALLATION

- A. A work area shall be required extending 10 feet (3 m) beyond buildings and canopies in all directions to the extent practical. The work area shall be flat, comprised of hard-packed soil or gravel, asphalt, or concrete, and free of open excavation, debris, construction equipment and construction workers. An additional flat work space a minimum of 25 feet (7.6 m) by 25 feet (7.6 m) or as practical shall be provided adjacent to the canopy and/or building for unloading and storing materials. Site to meet OSHA guidelines to allow lift equipment and scaffolding to maneuver the work area.
- B. Set pre-engineered metal canopy plumb and aligned. Level base plates true to plane with full bearing on concrete bases.
- C. Fasten pre-engineered metal canopy columns to anchor bolts and/or foundation bolts.
- D. Provide anchor bolts as follows:
 - 1. Anchor bolts or foundation bolts will be set by the Owner in accordance with approved site-specific drawings. They must not vary from the size and dimensions shown on the erection drawings. Use of a plywood template is recommended. Remove template prior to column erection.
 - 2. Anchor bolts shall conform to ASTM F1554 grade 55 and shall have a minimum of 7 inches (178 mm) of exposed thread and 23 inch (584 mm) minimum embedment with 1-1/4 inch (32 mm) nut and washer as embedment end.
- E. Provide bolted connections as follows:
 - 1. Structural erection bolts shall conform to ASTM A 325/A 325M.
 - 2. Bolts shall be tightened to snug tight per latest RCSC specifications (unless otherwise specified).
- F. Provide screws as follows:
 - 1. Fastening shall be performed per installation prints provided by the manufacturer.
 - 2. Self-drilling and self-tapping screws shall have a sufficient cut point and a 1/2 inch (13 mm) outside diameter dished metal-backed neoprene washer to be used in water sealing applications.
- G. Provide pedestrian protection and warnings during construction which comply with local, Federal, and OSHA codes.

- H. Prior to steel erection of any kind, the Contractor shall grade, backfill and otherwise prepare the job site to allow for rolling scaffold and ensure safe working conditions including the removal or relocation of overhead power lines.
- I. Any grade or elevation situations which deviate from the approved manufacturer's plans shall be conveyed to the manufacturer prior to fabrication.
- J. All anchor bolts and/or leveling plates shall be set within 1/4-inch (6 mm) tolerance on layout and grade level.
- K. Temporary electrical power shall be provided.
- L. Connect electrical power service to power distribution system according to requirements specified in Division 26 - Electrical.
- M. Dumpster for trash and debris shall be provided by the Contractor.

3.4 ADJUSTING AND CLEANING

- A. After completing installation, inspect exposed finishes and repair damaged finishes.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion

END OF SECTION