

**SHIREMANSTOWN BOROUGH COUNCIL**  
**SHIREMANSTOWN BOROUGH STORAGE AND MAINTENANCE BUILDING**

**Section 6**  
**Contract 15609.655-1**

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**GENERAL CONSTRUCTION - Contract 15609.655-1**

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**SECTION 1  
SPECIAL CONDITIONS  
Contract 1 - General Construction**

**A. GENERAL**

1. Scope of Project

a. Location

The Project is a new municipal storage and maintenance building for the Owner (Shiremanstown Borough) located along East Strawberry Alley, adjacent to the municipal building on 1 Park Lane in Shiremanstown Borough, Cumberland County, Pennsylvania in accordance with the Contract Documents.

b. Scope

It is the intent of the drawings and specifications to describe the construction of the municipal garage to be performed under separate prime contracts (the "Prime Contracts") as described below. Each Prime Contractor shall furnish all labor, materials, equipment, machinery, apparatus and tools and perform all operations necessary to install, equip and put into satisfactory operation the Work specified and shown on the Plans.

Any labor, materials, equipment, or apparatus not specifically mentioned in the plans or specifications which may be necessary for the proper completion of the entire Work shall be furnished by each Prime Contractor without additional compensation.

c. Contract Documents

The Contract Documents as defined in the Standard Contract Provisions which are made a part hereof. In the event of any inconsistency, the provisions of this Division I shall control.

d. Starting and Completing Work

The Contract work shall be started immediately upon receipt of a written notice from the Owner and shall be continued in full force until completion, unless approval to suspend work is granted by the Owner or unless delays occur due to unfavorable weather.

Before filing his bid, the Bidder shall have made all arrangements to be fully equipped to expeditiously carry on all work in case he is awarded a Contract and shall have made all arrangements to permit immediate transportation to the site of the work of all equipment, materials and other facilities required to execute the work.

In scheduling his operations, the Contractor shall take into consideration all delays that may occur due to unfavorable weather; failure of public utilities or others to install, remove or adjust their structures when required; and the uncertainties prevailing on account of a national emergency in regard to obtaining critical materials and labor to complete the various portions of such work in time.

e. Release of Lien

The Contractor shall provide to the Shiremanstown Borough Council a Release of Lien in a format acceptable to the Borough and properly signed by all tradesmen or suppliers which provided either materials or labor for the work performed under this contract. This Release of Lien shall be presented to the Shiremanstown Borough at the time of application for final payment.

2. Summary

- a. This Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.
- b. Specific requirements of each contract are also indicated in individual Specification Sections and on Drawings.
- c. Related Sections include the following:
  - 1) Section 2- Work Restrictions: Use of the Project site and for requirements for continued Owner occupancy of premises.
  - 2) Section 3 - Submittal and Testing Procedures.

3. Definitions

a. Permanent Enclosure

As determined by Architect/Engineer, permanent or temporary roofing, which is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

4. Prime Contracts

- a. Prime contracts for Project include the following:
  - Contract 1 – General Construction (Contract 15609.655-1)
  - Contract 2 – Mechanical Construction (Contract 15609.655-2)
  - Contract 3 – Electrical Construction (Contract 15609.655-3)
  - Contract 4 – Plumbing Construction (Contract 15609.655-4)

5. Coordination

a. Project Coordinator shall be responsible for coordination among all Prime Contractors.

1) General Construction Contractor ("General Contractor") shall act as the Project Coordinator.

b. General Contractor

1) The General Contractor shall have coordination responsibility of all and each prime contractors. This shall include:

a) Providing a master project schedule ("Master Project Schedule") which includes each separate Prime Contractor's scheduled responsibilities for delivery dates, installation, construction and critical activities for the Project.

b) Direct, schedule and control onsite activities of each separate Prime Contractor.

c) Provide specific directions to each Prime Contractor when unforeseen interferences impact the progress of the work.

2) The General Contractor shall be experienced in administration and supervision of building construction, including the scheduling and coordination of plumbing, HVAC and electrical work.

3) The coordination activities of the General Contractor include, but are not limited to, the following:

a. Provide overall coordination of the Work.

b. Coordinate shared access to workspaces.

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. Prepare Coordination Drawings (if and as required) to coordinate work by more than one contract.

h. Coordinate sequencing and scheduling of the Work.

j. Provide quality-assurance and quality-control services.

- k. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections with the testing laboratory.
- l. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
- m. Set elevations provided by the Engineer. The General Contractor shall also be responsible for setting all corners, batterboards, off-set stakes and other construction lines from property lines or other reference points provided by the Engineer.
- n. Provide waste collection and progress cleaning of common areas and coordinate waste collection, recycling and progress cleaning of areas or pieces of equipment where more than one contractor has worked.
- o. Coordinate cutting and patching of all the Work.
- p. Coordinate protection of the Work.
- q. Coordinate preparation of Project Record Documents; all information from all contractors is to be integrated to form one combined record set.
- r. Print and submit Record CAD Drawings if installations by more than one contractor are indicated on the same Contract Drawing or Shop Drawing.
- s. Collect Record Specification Sections from other contractors, collate Sections into numeric order, and submit one complete set.
- t. Coordinate preparation of operation and maintenance manuals; all information from all contractors is to be integrated to form one combined record set.

c. Prime Contractors

- 1) Each Prime Contractor shall be responsible to the General Contractor to coordinate that Prime Contractor's onsite activities. This includes submission of detailed information relating to the scheduling activities of material procurement, delivery dates, installation timeframes and notification of required work to be completed by other Prime Contractors prior to the installation of each Prime Contractor's work.
- 2) All onsite interferences with other trades shall be coordinated with the General Contractor. Unforeseen conditions that may arise and necessitate a Construction Change Directive shall be conveyed to the Engineer but shall be coordinated with the General Contractor.

- 3) The General Contractor shall be experienced in administration and supervision of building of building construction, including the scheduling and coordination of mechanical, plumbing and electrical work.

## 6. Schedules

### a. Pre-Award Information

The apparent low bidder for each Prime Contract shall, within ten (10) working days following notification of its status as apparent low bidder, provide the Engineer with an intended schedule for work to be completed. The Engineer shall transmit the information to the apparent General Contractor low bidder.

### b. Master Project Schedule

Within ten (10) working days following receipt of the information set forth in subsection a. above, the apparent low bidder for the General Construction Contract shall provide the Engineer with a Master Project Schedule which incorporates the schedules of the other Prime Contractors and which Master Project Schedule shall be controlling on all of the Prime Contractors thereafter.

Upon receipt, the Engineer shall provide a copy of the Master Project Schedule to each Prime Contractor along with the Notice of Award. No changes or deviations from the Master Project Schedule shall be permitted without approval from the Engineer and, if the change or deviation involves an extension in the time for completing the required Work, a written change order or directive as the case may be.

### c. Form of Schedule

The Master Project Schedule shall be a critical path schedule in such form as is approved by the Engineer.

- d. Failure to adhere to the Master Project Schedule by any Prime Contractor shall be considered a default of that Prime Contractor.

## 7. All Prime Contracts

### 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) All 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 shall be coordinated with and provided by the General Contractor unless otherwise specified (electrical service). See General Contractor specification for trenching specifications.
- 4) Selective demolition for the work of each contract shall be coordinated with the General Contractor and shall be provided by each Prime Contractor for its own work.
- 5) Cutting and patching for the Work of each contract shall be coordinated with the General Contractor and shall be provided by each Prime Contractor for its own Work.
- 6) Firestopping for the Work of each contract shall be coordinated with the General Contractor and shall be provided by each Prime Contractor for its own Work.

b. Substitutions

Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the Work.

c. Temporary Facilities and Controls

Each Prime Contractor is responsible as follows:

1) Access to the Construction Site

Access for all Prime Contractors to the Project site is the responsibility of the General Contractor, which shall construct and maintain temporary roads as necessary. Temporary roads shall be adequate to permit the entrance and egress of construction and supply vehicles of all contractors at all times during the construction period. No contractor/worker, or any subcontractor or supplier shall be permitted to use the existing driveways or any portion of the existing parking facilities without the approval of the Engineer.

2) Temporary Services

Each Prime Contractor is specifically responsible for the installation, operations, maintenance and removal of each temporary service or facility, usually recognized as related to that contractor's normal scope of work.

### 3) Use/Utility Charges

#### a) General

All utility charges for temporary facilities shall be paid for by the General Contractor. The Owner will not assume responsibility for any utility costs until the Certificate of Completion has been issued for the Project. Use charges (i.e., tapping fees, 3Ø power) will be paid by the Owner.

#### b) Sanitary Sewer Service

There shall be no discharge into the existing sanitary sewer system without prior written authorization by the Borough Engineer.

#### c) Water Service

Cost of all metered water service used by each Prime Contractor shall be the responsibility of the General Contractor.

For Shiremanstown Borough facility construction, water can be provided by the Borough from the existing service line at the Borough Office for low volume service, at the discretion of the Borough. Borough reserves the right to halt provision of water at its discretion.

#### d) Electrical Power Service

The cost for all temporary electric power service at the Project Site by all Prime Contractors shall be the responsibility of the General Contractor.

For Shiremanstown Borough facility construction, electricity can be provided by the Borough from the existing service line at the Borough building or alternate location for general service, at the discretion of the Borough. Borough reserves the right to halt provision of electricity at its discretion.

#### e) Utility Extensions

The cost of extending utilities to and on the Project Site shall be as is otherwise set forth in the plans and specifications.

#### f) Security and Protection Facilities

The General Contractor shall be responsible for installing temporary enclosures around partially completed areas of construction and provide lockable entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security. Each Prime Contractor shall be responsible for securing that contractor's own equipment and materials. In the event of loss, the Owner shall not be responsible. Each Prime Contractor shall be responsible to secure the Project work area at the end of each workday.

d. Right of Property

No Prime Contractor shall have any right in any property or materials taken from any excavation and no earth, sand or other material from the Site shall be removed before any fill operations, except with the approval of the Engineer. The provisions of this paragraph shall not be construed to relieve any Prime Contractor of any of its obligations to remove and dispose of any excavated material with or without re-handling at its cost and expense as otherwise provided in the specifications.

e. Concrete Mix Computations

In addition to the requirements of the specification "Concrete Construction," the Contractor shall employ a testing laboratory to prepare computations of the concrete mixes to be used, and submit the computations to the Engineer for approval. Such approval will not relieve the Contractor of responsibility of the mixes.

f. Minimum Wage Rates

The applicable Pennsylvania prevailing wage determination for this Project are attached to the Contract Documents and shall be complied with in accordance with the instructions to bidders.

g. Painting Work by Others

All pipe, conduit, equipment installed under the Electrical Prime Contract (Contract 15609.655-3) shall be painted by the General Contractor (Contract 15609.655-1). Colors shall be as directed by the Engineer.

h. Safety and Health Regulations

Each Prime Contractor shall comply with the Department of Labor, Safety and Health Administration Regulations for construction promulgated under the Occupational, Safety and Health Act of 1970 (P.L. 91-596) and under Section 107 of the Contract Hours and Safety Act (P.L. 91-54).

i. Miscellaneous

1) Vehicle Removal and Barricades

Removal of vehicles, barricading and other operations necessary for the completion of the required work for each Prime Contractor is the responsibility of that Contractor.

2) Designated Representative

Each Prime Contractor shall provide at least one responsible worker to answer emergency calls on a 24-hour basis and perform emergency service during non-working hours for any condition resulting from that Prime Contractor's construction activities which may present a hazard to the Project or to the public. This worker shall make himself available at any time of the day or night and any day of the week for any required emergency work and shall have available a proper vehicle, supplies and materials together with such authority as is required from the Prime Contractor to adequately perform his duties hereunder. If a contractor is notified of a deficiency which is not corrected within two hours from the time of notification, then the Owner may initiate repairs and the responsible Prime Contractor will be back charged.

3) Changes in the Project

Any changes in the Project which involve cost adjustments shall be only in accordance with the change order procedures otherwise set forth in the General Conditions.

4) Payments

Payments to each Prime Contractor shall be in accordance with payment applications as otherwise set forth in the general conditions and shall be in accordance with a lump sum contract price.

5) Time for Completion and Liquidated Damages

The responsibility to perform the Work for each Prime Contract shall commence upon receipt of a Notice to Proceed from the Engineer and shall continue in full force until completion which shall be within **180 (one hundred eighty) calendar days** from the date of receipt of the Notice to Proceed from each Prime Contract. No delays will be permitted unless a change order granting an extension of time is issued and approved by the Owner.

The parties recognize that the Owner will incur damages if the Project is not completed within the 180 day time period, and also recognize that these damages shall be difficult to ascertain or quantify. After reasonable investigation and consideration, and by executing the Contract, each Prime Contractor agree that **\$1000 per day** is a best effort estimate for damages resulting from delay in completion to the Owner. The Prime Contractors also agree that any damages resulting from failure to perform and complete the Work under each Prime Contract shall result in additional damages as are otherwise permitted to the Owner under applicable Pennsylvania law and which shall include additional engineering fees, inspection work and any other damages which are properly recoverable.

6) Insurance

Each Prime Contractor shall provide evidence of coverage of insurances as required under the General Conditions.

7) Indemnification

Each Prime Contractor shall indemnify and hold harmless the Owner, the Engineer and their respective agents and employees from and against all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from the performance of that Prime Contractor's Work, providing that any such claim, damage, loss or expense is:

- a) attributable to bodily injury, sickness, disease or death or to injury to or destruction of tangible property including the loss of use resulting therefrom.
- b) caused in whole or in part by any intentional or negligent act or omission of a Prime Contractor, its employees, subcontractors, suppliers or materialmen or anyone directly or indirectly employed by any of them or anyone for whose acts may be liable, regardless of whether or not it is caused in part by anyone indemnified hereunder.
- c) in any and all claims against the Owner or any of its agents or employees by any employee of any Prime Contractor, any subcontractor, supplier or materialmen of any of them, the indemnification obligation under this section shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor under workman's compensation acts, disability acts or other employee's benefit acts.

8) Release of Liens

All Contractors shall provide Owner a release of liens properly signed by all tradesmen, suppliers, subcontractors and subcontractors of subcontractors or anyone who has provided materials or labor for the Work performed under any Prime Contract. The release of liens shall be presented to the Engineer prior to the payment of the final retainage for any Prime Contractor's entitlement.

9) Operation and Maintenance Manuals

Each Prime Contractor shall collect two sets of catalog data including instructions for operations and care of all equipment, diagram, drawings, etc. for all pieces of equipment furnished under that Prime Contractor's

contract. The data shall be submitted to the General Contractor who shall reduce it into a single notebook form and suitably indexed. In addition to the data provided herein, the information contained shall include any and all manufacturer or supplier warranties which are issued pursuant to the required Work under the Contract. The General Contractor shall cause the same to be delivered to the Engineer prior to the release of final payment. This record shall also include the plan location and elevation of all underground piping and utilities and shall include "as built" buildings.

8. General Construction Contract

- a. Work in the General Construction Contract includes, but is not limited to, the following:
- 1) Site preparation, including cleaning and relocations and earthwork.
  - 2) Site improvements, including site development furnishings and equipment and seeding/restoration.
  - 3) Stormwater inlets, piping, stone and all components to install the required stormwater management system.
  - 4) Sanitary sewer lateral from oil/water separator to existing lateral.
  - 5) Water supply lateral from existing supply to new building.
  - 6) Oil-Water Separator and installation.
  - 7) Tunnels and trenching for site utilities.
  - 8) Foundations, including footings, foundation walls.
  - 9) Slabs-on-grade, including earthwork, subdrainage systems, and insulation.
  - 10) Paving and concrete as depicted on the plan for the site.
  - 11) Permanent Signs installation (signs provided by Borough).
  - 12) Concrete Bollards, Wheel Stops, and Concrete Bin Blocks and installation
  - 13) Below-grade building construction, including excavation, backfill, and thermal and moisture protection.
  - 14) Superstructure, including floor mezzanine and roof construction.
  - 15) Exterior closure, including walls, parapets, doors, windows and louvers.
  - 16) Roofing, including coverings, flashings, roof specialties and openings.

- 17) Interior construction, including partitions, doors, interior windows, and fittings.
- 18) Interior finishes.
- 19) Furnishings, including casework (no furniture or appliances).
- 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 Plumbing Contract, HVAC/Mechanical Contract or Electrical Contract.
  - 2) Unpiped sewers and drainage, including drainage ditches, dry wells, stabilization ponds, and containers. There shall be no discharge into the sanitary sewer system without prior written authorization by the Owner.
  - 3) Stormwater control, including the following:
    - a. Erosion and sediment controls
    - b. Foundation drainage system.
    - c. Site drainage system.
  - 4) Unpiped portable or temporary toilet fixtures, wash facilities, and drinking water facilities, including disposable supplies.
  - 5) Temporary enclosure for building exterior, except as indicated.
  - 6) Dewatering facilities and drains.
  - 7) General hoisting facilities for materials and personnel, up to 2 tons (2000 kg).
  - 8) Project identification and temporary signs as shall be designed and paid for by the General Construction Contractor.
  - 9) General waste recycling and disposal facilities.
  - 10) Temporary fire-protection equipment.
  - 11) Security enclosure and lockup.
  - 12) Traffic Control
  - 13) Environmental protection.
  - 14) Restoration of Owner's existing facilities used as temporary facilities.
  - 15) Soil stabilization; sedimentation and erosion control.

c. Miscellaneous

- 1) The General Contractor shall be responsible for determining the exact location of all utilities on the site and shall protect the utilities during the course of the work performed by all Prime Contractors. Notwithstanding, each Prime Contractor, shall at the discretion of the utility involved, repair or have repaired all damage to any utility which the result of the work of that Prime Contractor at no cost to the Owner. In the event that any utilities interfere with the installation of new building or appurtenances, each Prime Contractor must allow for such interference in his bid. Each Prime Contractor is required to comply with all provisions of Act 287 of the Commonwealth of Pennsylvania effective April 9, 1975. The cost of any required utility location shall be included in the General Contractor's lump sum bid on the proposal form.
- 2) Safety of the General Public. The General Contractor shall be responsible for the safety of the general public in or about the site at all times. All excavated areas shall be backfilled daily or roped off with lighted barricading.
- 3) The General Contractor is responsible for the obtaining of all necessary permits (i.e., building permit, excavation permit, etc.) from Shiremanstown Borough, Cumberland County or any governmental body having legal jurisdiction over the same. The cost of all permits shall be included in the bid price of the General Contractor.

9. Plumbing Contract

- a. Work in the Plumbing Contract includes, but is not limited to, the following:
  - 1) Site water supply and distribution.
  - 2) Site sanitary sewer, including oil/water separator.
  - 3) External and internal trench drains up to storm sewer system and oil/water separator on sanitary sewer.
  - 4) Site gas line service connection
  - 5) Site special plumbing systems.
  - 6) Plumbing fixtures.
  - 7) Domestic water distribution.
  - 8) Sanitary waste.

- 9) Plumbing connections to equipment furnished by the General Construction Contract, Plumbing Contract, HVAC/Mechanical Contract and Electrical Contract.
- b. Temporary facilities and controls in the Plumbing Contract include, but are not limited to, the following:
  - 1) Piped water service.
  - 2) Piped temporary toilet fixtures, wash facilities, and drinking water facilities.
  - 3) Plumbing connections to existing systems and temporary facilities and controls furnished by the General Construction Contract, Plumbing Contract, HVAC/ Mechanical Contract and Electrical Contract.

10. HVAC/Mechanical Contract

- a. Work in the HVAC/Mechanical Contract includes, but is not limited to, the following:
  - 1) Heat generation.
  - 2) Refrigeration.
  - 3) HVAC distribution.
  - 4) Terminal and packaged units.
  - 5) HVAC instrumentation and controls.
  - 6) HVAC testing, adjusting, and balancing.
  - 7) Mechanical connections to equipment furnished by the General Construction Contract, Plumbing Contract, HVAC/Mechanical Contract and Electrical Contract.
- b. Temporary facilities and controls in the Mechanical Contract include, but are not limited to, the following:
  - 1) Temporary heat and ventilation.

11. Electrical Contract

- a. Work in the Electrical Contract includes, but is not limited to, the following:
  - 1) Site electrical distribution (See site drawings).
  - 2) Site lighting.

- 3) Electrical service and distribution.
  - 4) Lighting and branch wiring.
  - 5) Telecommunications, security, computer wiring and audio-visual wiring. Equipment will be supplied by others.
  - 8) Electrical connections to equipment furnished by the General Construction Contract, Plumbing Contract, HVAC/Mechanical Contract and Electrical Contract.
- 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/ Mechanical Contract and Electrical Contract.

## 12. Separate Contracts

Any additional separate contracts will be secured by the Owner. Coordinate work prior to completion of rooms and final work. The following work will be provided by the Owner.

- a. Telephone and Data System Equipment
- b. Security System Equipment
- c. Furniture

## 13. Progress of the Work

- a. All scheduling and sequencing of the Construction Work shall be coordinated with the Owner.
- b. It is essential that the Contractors communicate on this job. A list of Contractors will be supplied by the Engineer prior to the start of work. The Contractors are directed to check on the progress of each contract to maintain a smooth flow of trades through the duration of the project. The General Construction Contractor (Contract 15609.655-1) shall act as the project coordinator. The Owner and Engineer will not be responsible for changes or rework necessary due to lack of coordination between Contractors.

Upon award of the project, the General Contractor (Contract 15609.655-1) shall arrange and conduct a sequencing and scheduling meeting with all contracts. Prior to construction, a master project schedule shall be submitted to the Borough for review and approval.

14. Subsurface Conditions

From investigations, including surveys made at the site, it is assumed that physical conditions are approximate, as indicated on the drawings, but the nature of the materials below the surface or the depth to satisfactory foundations, are not guaranteed. No additional compensation shall be paid for rock or any other subsurface condition. The Contractors expressly assumes the risk of any unexpected subsurface condition. No boring has been performed.

15. Non-Classified Excavation

All excavation shall be unclassified. The Contractors are hereby advised that where rock is encountered within the lines and grades shown on the drawings or described by the specifications for lump sum items on the contract proposal, removal of same will be paid for as a part of the applicable lump sum price bid and no extra compensation will be made therefore.

16. Project Photographs

Prior to construction, the General Contractor shall furnish three (3) sets of photographs of the site from four (4) views. During construction, the Contractor shall provide three (3) sets of detailed project photographs each month during construction. Copies of the photographs shall be supplied to the Engineer with pay applications.

17. Cleaning

a. General

1) Description

- a) Throughout the construction period, maintain the renovation area in a standard of cleanliness as described in this Section.
- b) Owner requires that this project generate the least amount of trash and waste possible. All Contractors shall comply with Section 017419 Construction Waste Management and Disposal.

2) Quality Assurance

- c) Conduct daily inspections and more often, if necessary, to verify that requirements for cleanliness are being met.
- d) In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

b. Products

1) Cleaning Materials and Equipment

Provide required personnel, equipment and materials needed to maintain the specified standard of cleanliness for a clean and neat site.

2) Compatibility

Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

c. Execution

1) Progress Cleaning

a) General

- (1) Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic and providing required protection of materials.
- (2) Do not allow accumulation of scrap, debris, waste material and other items not required for construction of this work.
- (3) At least once each week, and more often if necessary, completely remove all scrap, debris and waste material from the job site.
- (4) Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the environment.

b) Building

- (1) At the end of each day's work, inspect the building and pick up all scrap, debris and waste material. Remove such items to the place designated for their storage.
- (2) At the end of each day's work, sweep interior spaces clean; free from dust and other material capable of being removed by use of reasonable effort and a handheld broom.
- (3) As required preparatory to installation of succeeding materials, clean the building or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

- (4) Following the installation of finish floor materials, the finish floor shall be kept clean and protected at all times while work is being performed in the space in which finish materials are installed; free from foreign material which may be injurious to the finish floor material.

## 2) Final Cleaning

- a) Final cleaning shall be provided by skilled cleaners using commercial quality building maintenance equipment and materials.
- b) Prior to completion of the work, remove from the buildings job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article C.1 above.

### c) Building

#### (1) Exterior

- (a) Remove all traces of soil, waste materials, smudges and other foreign matter from exterior surfaces.
- b) In the event of stubborn stains not removable with water, the Architect may require other additional cleaning at no additional cost to the Owner.

#### (2) Interior

- (a) Remove all traces of soil, waste materials, smudges and other foreign matter from interior surfaces.
- (b) Remove all traces of splashed material from adjacent surfaces.
- (c) Remove paint droppings, spots, stains and dirt from finished surfaces.

#### (3) Polished Surfaces

To surfaces requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.

- d) Schedule final cleaning as approved by the Engineer to enable the Owner to accept a completely clean facility.

- e) Final acceptance of the building is contingent on approval of final cleaning.

3) Cleaning During Partial Occupancy

Should the Owner occupy the work of any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Engineer.

**B. UTILITIES**

The Contractor shall determine the exact location of all utilities affected by this work and shall protect the utilities during the course of the work. The Contractor shall, at the discretion of the utility involved, repair or have repaired all damage to the utilities, which is a result of the work, at no cost to the Owner. These utilities may interfere with the installation of the new lines or appurtenances and the Contractor must allow for such interference in his bid. The Contractor will be required to comply with all provisions of Act 287 of the Commonwealth of Pennsylvania, effective April 9, 1975. The cost of utility location shall be included in the Contractor's lump sum bid on the Proposal Form.

**C. SAFETY OF GENERAL PUBLIC**

The Contractor shall be responsible for the safety of the general public in or about the project site at all times. Excavated areas shall be backfilled daily or roped off with lighted barricading. Entrances to driveways and adjoining residents shall have sound steel plating or wood planking of uniform thickness, with handrails and adequate lighting across excavated areas to provide for a safe travel way to each residence. Notification to adjoining residents is to be given by the Contractor within a reasonable time to facilitate their arrival or departure from the residence. Notification to the Borough Council shall be given prior to any traffic restrictions, detours or road closings for coordination purposes.

**D. COMPARISON OF BIDS**

The bid proposals will be compared on the basis of the sum of the unit prices that appear on the Proposal Form. For a bid to be acceptable, unit prices for additions or deductions must agree with the total lump-sum price breakdown.

**E. CONTRACT DRAWINGS AND SPECIFICATIONS**

The plan copies or drawings of this project, prepared by Gibson-Thomas Engineering Co., Inc. and KD3 Design Studio, Inc., are included in these contract documents and on PennBID are hereby made an integral part of these contract Documents and Specifications. One set of the Contractor's drawings and Specifications shall be available at the job site at all times for use by the Engineer or his authorized representative.

**F. BASIS OF PAYMENT**

The work required by this Contract shall be paid for as detailed in the Standard Contract Provisions. Monthly payments will be made during the progress of the work, based upon the value of the work done as detailed in the Standard Contract Provisions. Adjustments in payments because of changes in the construction from that indicated in the Contract Drawings and Specifications, or by exigencies of the work and as authorized by the Engineer, will be in accordance with the requirements of the Standard Contract Provisions.

**G. PAYMENT OF PREVAILING WAGES**

The Contractor must compensate all employees associated with this project in accordance with the prevailing wage determinations made a part of these contract documents. The prevailing wage information must be displayed at a high-visibility site located in the contract work area. Pennsylvania Prevailing Wages apply to this project.

**H. PRE-CONSTRUCTION CONFERENCE**

A pre-construction conference will be held with Borough and Borough Engineer prior to the commencement of the project. Working sequence, scheduling, traffic control and safety will be discussed and determined with Borough President and Borough Engineer.

**I. CONSTRUCTION STAKE-OUT**

The contractor will be furnished with all benchmarks and field information from the original survey notes. The contractor will be responsible for the stakeout of all construction work included in this contract. This work shall be subject to the approval of the Engineer.

**J. TEMPORARY SERVICES**

It shall be the responsibility of the General Contractor to provide temporary services throughout the entire period of construction and until the work performed under his contract is completed and the placed in operation with the Owner's personnel. The temporary services shall include heat and water, as follows:

**a. Temporary Heat**

Prior to enclosure of the pump pit building or portions thereof, and when weather conditions indicate the necessity for temporary heat as determined by the Engineer, the General Contractor shall provide, maintain, operate and pay all costs including fuel for the sufficient number of approved portable heaters so the progress of the work is not impeded.

After the pump pit building or portions thereof are enclosed and the outside temperature falls below 50° F during normal working hours or below 35° F at any other time, the General Contractor shall provide for temporary heat. A tank shall be considered "enclosed" when (a) the exterior walls have been completed; and (b) when openings are closed with either temporary or permanent closures.

The General Contractor shall operate portable heaters or maintain a temporary heating system. The General Contractor shall pay all costs including fuel for the operation and maintenance of the equipment, either temporary or permanent, to provide adequate heat. The tank or tanks shall be maintained at a minimum temperature of 50° F except when a lower temperature is authorized by the Engineer. The General Contractor shall remove all soot, smudges and other deposits from walls and all exposed surfaces which are the result of the use of any temporary heating equipment including the use of the permanent heating system for temporary heat purposes. He shall not do any finish work until all such surfaces are properly cleaned. The General Contractor shall be responsible for the dismantling and/or removal of portable heaters and other temporary heating apparatus and equipment.

#### **K. COORDINATION OF WORK – ALL CONTRACTS**

It is essential that the Contractors communicate on this job. A list of Contractors will be supplied by the Engineer prior to the start of work. The Contractors are directed to check on the progress of each contract to maintain a smooth flow of trades throughout the duration of the project. The Owner and Engineer will not be responsible for changes or rework necessary due to lack of coordination between Contractors.

END OF SECTION

## A. GENERAL

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

This Section includes work restrictions for the Project.

a. During the construction period each Prime Contractor shall coordinate its use of the premises for construction operations, including use of the site, compliance with state and local procedures and regulations regarding the use of site and surrounding public ways.

- b. 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) Limits: Confine construction operations to areas of new construction.
  - 2) Clean wheels of construction vehicles before leaving construction site. Keep Owner's access roads and public roads free of construction dirt.
  - 3) The Contractor shall coordinate with the Owner or his representative for the purpose of defining and regulating temporary lay-down and storage areas, temporary utility hookups, and any other items which may require the use of various portions of the site.

Working hours and times for delivery of material and removal of debris and trash shall be as follows:

- END OF SECTION

## SECTION 3 SUBMITTAL AND TESTING PROCEDURES

### A. GENERAL

#### 1. Related Documents

- a. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- b. Certain specification sections contain additional submittal procedures for specified items. The requirements stated therein shall be primary for those items.

#### 2. Summary

- a. This Section includes administrative and procedural requirements for submittals, including the following:
  - 1) Shop Drawings.
  - 2) Product Data.
  - 3) Samples.
  - 4) Informational Submittals: Miscellaneous submittals
  - 5) Requests for Information (RFI); requests for clarification and interpretation.

#### 3. Definitions

- a. Action Submittals: Written and graphic information that requires Architect/Engineer's responsive action.
- b. Informational Submittals: Written information that does not require Architect/Engineer's approval. Submittals may be rejected for not complying with requirements.

#### 4. Submittal Procedures

- a. 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) Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

- a) Architect/Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

b. Processing Time

Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect/Engineer's receipt of submittal.

- 1) Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect/Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
- 2) Concurrent Review: Where concurrent review of submittals by Architect/Engineer's consultants, Owner, or other parties is required, allow 14 days for initial review of each submittal.
- 3) If intermediate submittal is necessary, process it in same manner as initial submittal.
- 4) Allow 10 days for processing each resubmittal.
- 5) No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

c. Identification

Place a permanent label or title block on each submittal for identification.

- 1) Indicate name of firm or entity that prepared each submittal on label or title block.
- 2) Provide a space on label or beside title block to record review and approval markings and action taken by Architect/Engineer.
- 3) Include the following information on label for processing and recording action taken:
  - a) Project name.
  - b) Date.
  - c) Name and address of Architect/Engineer.
  - d) Name and address of Contractor.
  - e) Name and address of subcontractor.
  - f) Name and address of supplier.
  - g) Name of manufacturer.
  - h) Unique identifier, including revision number.
  - i) Number and title of appropriate Specification Section.
  - j) Drawing number and detail references, as appropriate.

k) Other necessary identification.

d. Deviations

Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

e. Additional Copies

Unless additional copies are required for final submittal, and unless Architect/Engineer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

f. Transmittal

Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect/Engineer return submittals, without review, received from sources other than Contractor.

- 1) Paper or Electronic submittals may be provided, except for color and texture approvals. Send to or Email to Borough Engineer for distribution.
- 2) On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect/Engineer on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
- 3) Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
- 4) Transmittal Form: Provide locations on form for the following information:
  - a. Project name.
  - b. Date.
  - c. Destination (To:).
  - d. Source (From:).
  - e. Names of subcontractor, manufacturer, and supplier.
  - f. Category and type of submittal.
  - g. Submittal purpose and description.
  - h. Submittal and transmittal distribution record.
  - i. Remarks.
  - j. Signature of transmitter.

g. 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.

h. Use for Construction

Use only final submittals with mark indicating action taken by Architect/Engineer in connection with construction.

i. Requests for clarification or interpretation including Request for Information (RFI) shall be in writing (mailed or emailed) to the Engineer – copy Architect.

## **B. PRODUCTS**

1. Action Submittals

a. 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: Include the following information, as applicable:

- a) Dimensions.
- b) Identification of products.
- c) Fabrication and installation drawings.
- d) Roughing-in and setting diagrams.
- e) Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
- f) Shopwork manufacturing instructions.
- g) Templates and patterns.
- h) Schedules.
- i) Design calculations.
- j) Compliance with specified standards.
- k) Notation of coordination requirements.
- l) Notation of dimensions established by field measurement.

2) Wiring Diagrams

Differentiate between manufacturer-installed and field-installed wiring.

- b) Product name or name of manufacturer.
- c) Sample source.

4) Additional Information

On an attached separate sheet, prepared on Contractor's letterhead, provide the following:

- a) Size limitations.
  - b) Compliance with recognized standards.
  - c) Availability.
  - d) Delivery time.
- 5) Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
- a) If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least 3 sets of paired units that show approximate limits of the variations.
  - b) Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

6) Number of Samples for Initial Selection

Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect/Engineer will return submittal with options selected.

7) Number of Samples for Verification

Submit 3 sets of Samples. Architect/Engineer will retain 1 Sample set; remainder will be returned.

- a) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

8) Disposition

Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

- a) Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

- b) Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

- c. Product Schedule or List

Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

- 1) Type of product. Include unique identifier for each product.
- 2) Number and name of room or space.
- 3) Location within room or space.

- 2. Architecture/Engineer's Action

- a. General

Architect/Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

- b. Action Submittals

Architect/Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect/Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

- 1) Architect/Engineer's action on shop drawings will result in making one of five notations on them; namely "SATISFACTORY," "UNSATISFACTORY," "SATISFACTORY AS NOTED," "SATISFACTORY AS NOTED, REVISIONS REQUIRED," or "UNSATISFACTORY, REVISE AND RESUBMIT."
- 2) Final Unrestricted Release: When the Architect/Engineer marks a submittal "SATISFACTORY," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
- 3) Final-But-Restricted Release: When the Architect/Engineer marks a submittal "SATISFACTORY AS NOTED" the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
  - a) Resubmit to Architect/Engineer a file copy of submittal stamped by Architect/Engineer as "SATISFACTORY AS NOTED," after the corrections have been made.
- 4) Returned for Re-submittal: When the Architect/Engineer marks a submittal "SATISFACTORY AS NOTED, REVISIONS REQUIRED," or

"UNSATISFACTORY, REVISE AND RESUBMIT," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.

- a) Do not use, or allow others to use, submittals marked "UNSATISFACTORY," "SATISFACTORY AS NOTED, REVISIONS REQUIRED," or "UNSATISFACTORY, REVISE AND RESUBMIT," at the Project Site or elsewhere where Work is in progress.

- 3. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect/Engineer will return the submittal marked "Action Not Required."

c. Informational Submittals

Architect/Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect/Engineer will forward each submittal to appropriate party.

- d. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

## C. TESTING

1. Laboratory Testing

The materials listed shall require advance and periodic laboratory tests as indicated, and shall be sampled in accordance with the methods of ASTM and as directed by the Engineer. With the exception of concrete test cylinders and mixing water, duplicate advance samples of all materials requiring laboratory tests shall be submitted to the Engineer, one of which will be certified by the Engineer for submission to the testing laboratory and the other retained on the job site in suitable storage provided by the Contractor. Except as noted on the following chart, preliminary samples of materials for advance laboratory tests shall be submitted at least two (2) weeks prior to starting delivery of such materials to the site of the project.

The testing laboratory shall furnish both the Engineer and the contractor with two (2) copies of the reports showing the results of such tests, and the reports shall be considered as sufficient evidence of the acceptance or rejection of the quality of the materials tested.

The specifications for, and the method of testing will be found under the detailed specifications for the particular material involved. All samples shall be properly packed and clearly marked as to source and intended use.

5) 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 40 inches.

4) Number of Copies

Submit 5 prints for the Architect/Engineer's review.

- a) The Architect/Engineer will stamp each submittal with a uniform action stamp; refer to Article 3.02
- b) Distribution: Contractor is responsible for distributing required prints of shop drawings to his subcontractors and material suppliers after review by the Architect/Engineer.
- c) One copy of each shop drawing shall be kept at the project site.
- d) Contractor shall submit one copy of each shop drawing to the Owner at the end of the project as a "Record Document."

b. Samples

Prepare physical units of materials or products, including the following:

1) Samples for Initial Selection

Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

2) Samples for Verification

Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

3) Preparation

Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect/Engineer's sample where so indicated. Attach label on unexposed side that includes the following:

- a) Generic description of Sample.

<b>Material</b>	<b>Test Frequency</b>	<b>Sample</b>	<b>Shipping Container</b>
Fine Aggregate	Advance, first shipment then ea. 100 tons	100 lbs	Canvas Sack
Coarse	Advance, first shipment then ea. 200 tons	Stone or Gravel 200 lbs.	Strong Sack
Water (for concrete)	Advance for each source	One Quart	Plastic
Concrete a. Trial Mix  b. Air Entrainment  c. Tests of Job Concrete	Advance test using approved materials 2 at 28 days  Advance test of trial mix when air-entraining agent used.  Advance then each 50 c.y. for the first 100 c.y., and then each 100 c.y. thereafter, but not less than 1 test for each individual structure	4 cylinders per mix, 2 broken at 7 days    4 cylinders per test 2 broken at 7 days 2 at 28 days	Wood
Reinforcement (Bar)	Advance	2 pc. ea - Dia. 2 ft. lg.	
Reinforcement (Mesh)	Advance	2 s.f.	
Brick	Advance, then each lot of 50,000 or less for each grade	5 bricks	Wood
Facing Tile	Advance, then each lot of 10,000 units or fraction thereof.	10 units per test	Wood
Concrete Masonry Units	Advance, then each lot of 10,000 units or fraction thereof.	10 units per test	Wood

In the event that the 28-day cylinders of concrete fail to meet the strength requirements, the Contractor shall obtain and test concrete core specimens from the affected area. The drilled cores shall be obtained and tested in conformance with ASTM Specification C42-64, the tests to be conducted by an independent testing laboratory. The number of cores required and the location from which core is taken will be determined by the Engineer.

A core specimen taken perpendicular to a horizontal surface shall be located, when possible, so that its axis is perpendicular to the bed of the concrete as originally placed and not near formed joints or obvious edges of a unit of deposit.

A specimen taken perpendicular to a vertical surface, or perpendicular to a surface with a batter, shall be taken from near the middle of a unit of deposit when possible and not near formed joints or obvious edges of a unit of deposit.

The diameter of core specimens should be at least three times the maximum nominal size of the coarse aggregate used in the concrete, but must be at least 2 inches in diameter. The length of the specimen, when capped, shall be at least twice the diameter of the specimen. The core specimens shall be taken to the laboratory and when transported, shall not be thrown, dropped, allowed to roll, or damaged in any way.

Test results shall be mailed directly to the Engineer from the testing laboratory. If the average of the test results on core specimens taken from a given area fail to meet the 28 day strength requirement, the Contractor shall strengthen or replace those portions of the structure which fail to develop the required strength. The Contractor shall perform all such work, including sampling and testing, as directed by the Engineer at the Contractor's own expense.

## 2. Shop Tests

The materials listed below shall be tested at the shop or plant of, and by, the producer. Each manufacturer of such materials shall be fully equipped to carry out the tests herein designated. Upon demand of the Engineer, the manufacturer shall perform such additional number of tests as the Engineer may deem necessary to establish the quality of the material offered for use. The Engineer shall be furnished with certified records or reports of the results of all tests, such reports or records to contain a sworn statement that the tests have been made as specified.

The Engineer reserves the right to require that laboratory tests also be conducted on any or all of the materials listed below as he deems necessary; and it will be the General Contractor's responsibility to furnish, without compensation, all labor, materials and equipment necessary for collecting, packaging and identifying representative samples of materials to be tested and the shipping of such samples to the testing laboratory.

<b>Material</b>	<b>Test Method</b>	<b>Number of Tests</b>
Cement	ASTM C-114	Chemical analysis, one for each 500 barrels.
Cast Iron Pipe (Pit Cast) (Centrifugally Cast)	ASA A-21.2	Chemical analysis, each heat; Hydrostatic test, each piece.
Cast Iron Pipe	ASA A-21.6 ASA A-21.8	Chemical analysis, each heat; Hydrostatic Test, each.
Reinforced Concrete Pipe	ASTM C-76	As specified in ASTM C-76
Precast Reinforced Concrete Manhole Risers and Tops	ASTM C 478-61T	As specified in C-478-61T
Corrugated Metal Culvert Pipe	AASHTO M-36	As specified in AASHTO M-36.

### 3. Field Tests

All sewers, waterlines, piping and equipment shall be tested in the field after installation in the presence of the Engineer or his authorized representative, in the manner prescribed in the applicable sections of these specifications. The Engineer may also perform any other field tests necessary to determine compliance with the contract requirements. The Contractor shall furnish all necessary labor, equipment and materials for such tests and, with the exception of the Engineer's expenses, shall bear all the costs thereof.

END OF SECTION

## SECTION 4 SUBSURFACE INVESTIGATION

### A. SUBSURFACE INVESTIGATION

1. Description

- a. A boring log has not been prepared or provided.
- b. Use of Data:
  - 1) Test pit data is provided for Bidders reference only and are not a warranty of subsurface conditions.
  - 2) Bidders should visit the site and acquaint themselves with existing conditions.
  - 3) Prior to bidding, Bidders may make their own subsurface investigations to satisfy themselves as to site and subsurface conditions, but such investigations may be performed with schedules and arrangements approved in advance by the Owner.

END OF SECTION

## **SECTION 5 SITE CLEARING**

### **A. GENERAL SITE CLEARING REQUIREMENTS**

#### **1. General**

- a. Demolish and remove Existing Garage
- b. Remove surface debris.
- c. Remove paving, curbs, as required.
- d. Clear site of plant life and grass.
- e. Remove trees and shrubs as required to perform the work indicated on the contract plans.
- f. Remove root system of trees and shrubs.

#### **2. Regulatory Requirements**

- a. Conform to applicable code for disposal of debris. Burning debris on site is not permitted without approval of local municipality.
- b. Coordinate clearing work with utility companies.

### **B. PRODUCTS**

#### **1. Materials**

- a. Herbicide: Only those acceptable to authorities having jurisdiction.

### **C. EXECUTION**

#### **1. Preparation**

- a. Confirm all Borough equipment and material is removed from site.
- b. Confirm Borough material is removed from Garage.
- c. Coordinate disconnection of electric supply to Garage with Power Company.
- d. Verify that existing plant life and features designated to remain are tagged or identified.

#### **2. Protection**

- a. Protect utilities that remain, from damage.
- b. Protect trees, plan growth, and features designated to remain as final landscaping.
- c. Protect benchmarks from damage or displacement.

#### **3. Clearing**

- a. Clear areas required for access to site and execution of work.
- b. Demolish Garage and remove material.

- c. Remove paving, curbs, as required.
- d. Remove trees and shrubs within marked areas. Remove stumps, main root ball.
- e. Clear undergrowth and deadwood without disturbing subsoil.
- f. Apply herbicide to remaining stumps to inhibit growth.

4. Removal

- a. Remove demolished material, debris, rock, and extracted plant life from site.
- b. Disposal location is the Contractor's responsibility.
- c. Do not bury or burn material on site.

END OF SECTION

## **SECTION 6 ROUGH GRADING**

### **A. GENERAL ROUGH GRADING REQUIREMENTS**

#### 1. General

- a. Removal of topsoil and subsoil.
- b. Cutting, grading, filling and rough contouring the site.

#### 2. References

- a. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- b. ANSI/ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- c. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.

#### 3. Submittals

Submit under the Standard Contract Provisions.

#### 4. Project Record Documents

Accurately record actual locations of utilities remaining, by horizontal dimensions.

### **B. PRODUCTS**

#### 1. Materials

##### a. Topsoil

Excavated material, graded, free of roots, rocks larger than 1 inch, subsoil, debris, and large weeds.

##### b. Subsoil

Excavated material, graded, free of lumps larger than 6 inches, rocks larger than 3 inches, and debris.

### **C. EXECUTION**

#### 1. Examination

- a. Verify site conditions under provisions of Standard Contract Provisions.

- b. Verify that survey benchmark and intended elevations for the work are as indicated.

## 2. Preparation

- a. Identify required lines, levels, contours, and datum.
- b. Identify known underground, above ground, and aerial utilities. Stake and flag locations.
- c. Notify utility companies to remove and/or relocate utilities.
- d. Protect above and below grade utilities which are to remain.
- e. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- f. Protect benchmarks, sidewalks, paving and curbs from excavation equipment and vehicular traffic.
- g. Maintain Access to the existing parking areas at all times.
- h. Maintain Access to the existing facilities at all times.

## 3. Topsoil Excavation

- a. Excavate topsoil from areas to be further excavated, re-landscaped, or re-graded.
- b. Stockpile in a separate area on site. Excess topsoil not being reused, is to remain the property of the Owner, and will be placed at a designated location on site, seeded and mulched for stabilization.
- c. Do not excavate wet topsoil.
- d. Stockpile topsoil to depth not exceeding 8 feet. Protect from erosion.

## 4. Subsoil Excavation

- a. Excavate subsoil from areas to be further excavated, re-landscaped or re-graded.
- b. Stockpile in area designated on site as space permits. All other material to be wasted on site as space permits without encroachment on property lines or streams. Excess material must be removed and disposed of as incidental to the Contract.
- c. Do not excavate wet subsoil.
- d. Stockpile subsoil and protect from erosion.

## 5. Filling

- a. Fill areas to contours and elevations with unfrozen materials. If adequate or suitable material is not available on site, the Contractor must supply it at no additional cost to the Owner.

- b. Subsoil and Topsoil Fill: Place and compact material in continuous layers not exceeding 12 inches compacted depth, compacted to 95 percent.
- c. Maintain optimum moisture content of fill materials to attain required compaction density.
- d. Slope grade away from building minimum 2 inches in 10 ft., unless noted otherwise.

6. Tolerances

- a. Top Surface of Subgrade: Plus or minus 1/10 ft.

7. Field Quality Control

- a. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D698 and/or D1557.
- b. Compaction testing will be performed in accordance with ANSI/ASTM D1556 and/or D1557 and/or ANSI/ASTM D698 whichever is applicable.
- c. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

END OF SECTION

## **Section 7 - Excavation**

### **A. GENERAL EXCAVATION REQUIREMENTS**

#### **1. General**

The work covered by this section of the specifications is excavation for new wall and column foundations, spread foundations, grade beams, roadways/access roads, parking areas, slabs on grade and underground utilities as indicated on the Contract Drawings.

#### **2. Field Measurements**

The Contractor is responsible for verifying that the survey benchmark and intended elevations for the work are as indicated.

### **B. EXECUTION**

#### **1. Preparation**

- a. Identify required lines, levels, contours and datum.
- b. Identify known underground, above ground and aerial utilities. Stake and flag locations.
- c. Notify utility companies to remove and/or relocate utilities, if necessary.
- d. Protect above and below grade utilities which are to remain.
- e. Protect plant life, lawns and other features remaining as a portion of final landscaping.
- f. Protect bench marks, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.

#### **2. Excavation**

- a. All excavation work is to be in accordance with the Pennsylvania Department of Labor and Industry "Regulations for Trenches and Excavations".
- b. Excavate to the elevations and dimensions shown on the Contract Drawings. Extend excavations a sufficient distance from walls, spread foundations and grade beams to allow for the installation of forms and services.
- c. Brace and shore the sides of excavations as necessary.
- d. Machine slope sides of excavations to the materials angle of repose or less until shored.

- e. Excavation cuts shall not interfere with the normal 45 degree bearing splay of foundations.
- f. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- g. Hand-trim excavation. Remove loose matter.
- h. Remove lumped subsoil, boulders, and rock up to 1/3 c.y. measured by volume.
- i. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- j. Correct unauthorized excavation at no extra cost to Owner.
- k. Correct areas over-excavated by error in accordance with Standard Contract Provisions.
- l. Stockpile excavated material in an area designated on site by the Engineer. If no on-site area is available, the Contractor is responsible for wasting the excess material off site at no additional cost to the Owner.
- m. Excavations for foundations shall extend to the elevations indicated on the Contract Drawings or to the elevation necessary to achieve a minimum bearing capacity of 2000 PSF, but not less than 3'-0" below the proposed finished grade.
- n. Blasting is not permitted.
- o. Backfill spaces excavated for but not occupied by structures with material indicated on the Contract Drawings.

### 3. Field Quality Control

Provide for visual inspection of all foundation bearing surfaces. Foundation excavations shall be approved by the Engineer's representative prior to placing concrete.

### 4. Protection

- a. Protect excavations by any methods required to prevent cave-in or loose soil from falling into the excavation.
- b. Protect the bottom of excavations and soil adjacent to and beneath foundations from freezing.

### 5. Sequence of Work

Perform all work in accordance with the sequence given in the Special Conditions of this Contract and as coordinated with the General Contractor.

6. Soil Conditions

No boring logs are included in this specification.

END OF SECTION

## **SECTION 8 - TRENCHING**

### **A. GENERAL TRENCHING REQUIREMENTS**

1. This work shall include:
  - a. Excavating trenches for all utilities except Electrical Service utility work.
  - b. Compacted bedding under utilities and fill to sub-grade elevations. This Contract will be responsible for the individual utilities shown on the Drawings.
  - c. Backfilling and compaction over all utilities.

2. Field Measurements

Verify that survey benchmark and intended elevations for the work are as shown on Drawings.

### **B. EXECUTION**

1. Examination

Excavated materials may be reused as fill if approved by the Engineer's Representative.

2. Preparation

- a. Identify required lines, levels, contours, and datum.
- b. Protect benchmarks, sidewalks, paving and curbs from excavation equipment and vehicular traffic.
- c. Protect above and below grade utilities which are to remain.

3. Excavation

- a. Excavate subsoil required for storm sewer, sanitary sewer, water, and gas piping to municipal utilities.
- b. Unless otherwise shown or specified, the depth of trenches at the exterior of the building shall provide not less than 48 inches of cover over water lines and not less than 30 inches of cover over sanitary and storm sewers.
- c. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.
- d. Excavation shall not interfere with the normal 45 degree bearing splay of foundations.

- e. Hand trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- f. Correct unauthorized excavation at no cost to Owner.
- g. Stockpile excavated material in area designated on site and remove excess material not being used, from site.
- h. Install magnetic locating tape.

4. Bedding

Support pipe during placement and compaction of bedding fill with select backfill as approved by the Engineer's Representative.

5. Backfilling

- a. Backfill trenches to the contours and elevations indicated on the Contract Drawings with unfrozen materials. Use stone as specified under all paving and parking areas.
- b. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

c. Granular Fill

Place and compact materials in continuous layers not exceeding 6".

d. Soil Fill

Place and compact material in continuous layers not exceeding 6" compacted depth.

- e. Maintain optimum moisture content of backfill materials to attain required compaction density.

6. Tolerances

- a. Top Surface of Backfilling - Under Paved Areas: Plus or minus one inch from required elevations.
- b. Top Surface of General Backfilling - Plus or minus one inch from required elevations.

7. Protection of Finished Work

- a. Protect finished work under the Standard Contract Provisions.
- b. Re-compact fills subjected to vehicular traffic.

END OF SECTION

## **Section 9 - BACKFILLING**

### **A. GENERAL BACKFILLING REQUIREMENTS**

1. This work shall include:
  - a. Site filling and backfilling as indicated on the Contract Drawings.
  - b. Fill under building slabs-on-grade and paving as indicated on the Contract Drawings.
  - c. Consolidation and compaction.
  - d. Fill for over-excavation.
  - e. Place fill to final access road and site contours.

### **B. PRODUCTS**

1. Fill Materials
  - a. 2B Limestone under concrete slabs or as indicted on the Contract Drawings.
  - b. Concrete: Lean concrete with a minimum 28-day compressive strength of 3000 psi where footing trenches have been over-excavated.
  - c. Roadway and Paving: Grade and level access road as indicated on the Contract Drawings.
2. Accessories
  - a. Vapor Retardant: 6 mil thick, polyethylene.

### **C. EXECUTION**

1. Examination

All fill materials shall be inspected and accepted by the Engineer's representative prior to placement.
2. Preparation
  - a. Generally, compact subgrade to density requirements for subsequent backfill materials.
  - b. Proof roll all building sites.
  - c. Cut out soft areas of subgrade not capable of insitu compaction. Backfill with fill and compact to density equal to or greater than requirements for subsequent backfill material.
3. Backfilling - General
  - a. Fill material shall be obtained from excavation or furnished from other sources as required.

- b. Fill material shall be as indicated on the Contract Drawings. Otherwise, fill material shall be earth free from debris, stumps, roots, organic or frozen matter. Do not place fill on soft or frozen areas.
  - c. Backfill areas to the contours and elevations shown on the Contract Drawings with unfrozen materials.
  - d. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
  - e. Granular Fill: Place and compact materials in continuous layers not exceeding 8 inches compacted depth.
  - f. Soil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth.
  - g. Employ a placement method that does not disturb or damage foundation dampproofing and utilities in trenches.
  - h. Maintain optimum moisture content of backfill materials to attain required compaction density.
  - i. Fill shall be placed after permanent installations of utility lines have been completed.
  - j. Backfill against supported foundation walls. Do not backfill against unsupported, foundation walls.
  - k. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
  - l. Slope grade away from buildings at a minimum rate of 2 inches in 10 ft. unless noted otherwise.
  - m. Make grade changes gradual. Blend slope into level areas.
  - n. Spoil excess material onsite to Engineer satisfaction, all other surplus backfill materials from site must be removed and disposed of at Contractor's costs.
  - o. Leave fill material stockpile areas completely free of excess fill materials.
4. Tolerances  
Top surface of backfilling under paved areas: plus or minus one inch from required elevations.
5. Protection of Finished Work  
Re-compact fills that are disturbed by vehicle or equipment traffic.

END OF SECTION

## **Section 10 – BITUMINOUS PAVING**

### **A. DESCRIPTION**

This work shall be the placement of PENNDOT No. 2A stone subbase, Bituminous Concrete Base Course, Bituminous Concrete Binder Course and Bituminous Wearing Course to the limits indicated on the Contract Plans and described herein. This work shall include the furnishing and/or installation of all materials, equipment, and appurtenances and any other necessary work required for proper construction.

This work shall be in accordance with all applicable sections of PENNDOT Publication 408. The Contractor shall comply with all of the requirements of the Owner, PENNDOT, and other governmental agencies having jurisdiction over any phase of the work.

### **B. MATERIALS**

All materials shall be in accordance with the applicable sections of PENNDOT Publication 408, latest edition.

a. Subbase

PENNDOT No. 2A Stone in accordance with PENNDOT Publication 408.

b. Bituminous Concrete Base Course

Superpave HMA, 25mm PG 64-22, 0.3 to <3M ESAL's, in accordance with PENNDOT Publication 408.

c. Bituminous Binder Course

Superpave HMA, 9.5mm PG 64-22, 0.3 to <3M ESAL's, in accordance with PENNDOT Publication 408.

d. Bituminous Wearing Course:

Superpave HMA, 9.5mm PG 64-22, 0.3 to <3M ESAL's in accordance with PENNDOT Publication 408.

### **C. CONSTRUCTION**

This work shall be in accordance with all applicable sections of PENNDOT Publication 408.

END OF SECTION

## **Section 11 – MISCELLANEOUS SITE IMPROVEMENTS**

### **A. DESCRIPTION**

This work shall be the provision and placement of miscellaneous site improvements. This work shall include the furnishing and/or installation of materials as outlined below.

### **B. Wheel Stops**

Eleven (11) wheel stops shall be installed at the north side of the building in the parking area. The wheel stops shall be six (6) foot in length, seven and three-quarter inches ( $7\frac{3}{4}$ " wide, and four and three-quarter inches ( $4\frac{3}{4}$ " in height. Number 8 rebar pins, thirty (30) inches in length, shall affix the wheel stops to the pavement surface.

The Contractor shall coordinate the wheel stop installation with the paving. Final wearing shall be placed prior to the installation of the rebar or wheel stops.

### **C. Concrete Bollards and Bollard Sleeves**

The Contractor shall first auger out eighteen (18) holes for the bollards where indicated on the Drawings. Each hole must be at least eighteen inches (18") in diameter, and three and one-half feet (3.5') deep from final concrete grade. The bollards shall be 6" galvanized steel pipe filled with concrete, to be capped by a three-quarter inch ( $\frac{3}{4}$ ") thick steel plate.

The Contractor shall provide and install the eighteen (18) bollards along the garage with yellow plastic sleeves.

### **D. Sign Installation**

Signposts shall have a Class A concrete footing; buried a minimum of three (3) feet underground; with the signpost buried six (6) inches from the bottom of the footing. The footing shall be a minimum of eight (8) inches in diameter, with the signpost in the center.

Signposts installed along the parking lot shall be three inch (3") galvanized steel U-posts, with a breakaway base. The Contractor will be responsible for removing and relocating the two (2) ADA accessible signs as shown on the Contract Drawings. The Contractor may re-use the parking signs. The voids created by the removal of the signage shall be backfilled and tamped to four inches (4") below final grade; and the final four inches (4") of backfill shall be screened topsoil.

### **E. Concrete Bin Blocks**

Provide and place concrete bin blocks for material bins located on the western side of the building.

Bin blocks shall be interlocking, stackable concrete blocks 2' H x 2' W x 6' L (Full Block) Weight: Approx. 3,600 lbs

Blocks shall have interlocking system, which is made up of v-wedges with two sets of these wedges on a block. One wedge on the top and side of the block, with a reverse wedge on the

bottom and opposite side of the block. The wedges shall enable the blocks to smoothly and efficiently lock together.

Blocks shall have a rebar handle loop that can be utilized for movement of the blocks.

**F. Oil-Water Separator**

- a. Provide and install a sand/oil/water separator designed for vehicle maintenance and washing facilities and as shown on the Drawings, from inside trench floor drains to sanitary sewer.
- b. Separator shall be concrete precast tank or all steel, welded construction suitable for underground installation as shown on the plans.
- c. Oil-Water Separator capacity shall be 500 gallons.
- d. Interceptor shall be manufactured by Kistner Concrete Products Inc. or Highland Tank or approved equal.
- e. Install the separator in accordance with the Manufacturer's Installation Instructions.

**G. TRAFFIC CONTROL**

Barricading and traffic control shall be provided as necessary to provide continuous access to the Borough offices, park and Strawberry Alley by the General Contractor. Comply with requirements of PennDOT Publication 203.

Roads and access may be limited intermittently and temporarily for certain construction activities where approved by the Borough.

**H. TREES AND SHRUBS**

The trees and shrubs to be used are specifically called out on the Contract Drawings (C-2). All plantings must be bought through a nursery, which must be named in the pre-construction submittals.

END OF SECTION

## **Section 12 - SEEDING**

### **A. GENERAL**

This work is seeding all disturbed areas.

1. Work Included

- a. Fertilizing
- b. Seeding, Hydro-seeding
- c. Mulching
- d. Maintenance

2. References

FS 0-F-241 - Fertilizers, Mixed, Commercial

3. Definitions

Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

4. Regulatory Requirements

Comply with regulatory agencies for fertilizer and herbicide composition.

5. Quality Assurance

Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

6. Maintenance Data

Include maintenance instructions, cutting method and maximum grass height. Include types, application frequency, and recommended coverage of fertilizer.

7. Delivery, Storage and Handling

- a. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- b. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

## **B. PRODUCTS**

### **1. Acceptable Seed Suppliers**

Well-established local nursery or seed suppliers.

### **2. Seed Mixture**

- a. Kentucky Blue Grass: 30 percent.
- b. Creeping Red Fescue Grass: 30 percent
- c. Norlea Perennial Rye: 30 percent
- d. Red Top: 10 percent

### **3. Soil Material**

Topsoil: Excavated from site or off site and free of weeds.

### **4. Accessories**

- a. Apply lime @ 3 tons/acre.
- b. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- c. Fertilizer: Recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil. Apply at a rate of 1000 lbs of 10 -10 -10/acre.
- d. Water: Clean, fresh and free of substances of matter that could inhibit vigorous growth of grass.
- e. Stakes: Softwood lumber, chisel pointed.
- f. String: Inorganic fiver.
- g. Edging: Plastic.

## **C. EXECUTION**

### **1. Inspection**

- a. Verify that prepared soil base is ready to receive the work of this section.
- b. Beginning of installation means acceptance of existing site conditions.

### **2. Fertilizing**

- a. Apply fertilizer in accordance with manufacturer's instructions.
- b. Apply after smooth raking of topsoil and prior to roller compaction.

- c. Do not apply fertilizer at same time or with same machine that will be used to apply seed.
- d. Mix thoroughly into upper 2 inches of topsoil.
- e. Lightly water to aid the dissipation of fertilizer.

3. Seeding

- a. Apply seed at a rate of 4 lbs. per 1000 s.f. evenly in two intersecting directions. Rake in lightly. Do not seed area in excess of that which can be mulched on same day.
- b. Do not sow immediately following rain, when ground is too dry or during windy periods.
- c. Roll seeded area with roller not exceeding 112 lbs.
- d. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- e. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

4. Seed Protection

Cover seeded slopes where grade is 4 inches per foot or greater with mulch and apply hold down string with stakes if required.

5. Maintenance

Maintain seeded areas for the duration of the Contract.

- a. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- b. Neatly trim edges and hand clip where necessary.
- c. Immediately remove clippings after mowing and trimming.
- d. Water to prevent grass and soil from drying out.
- e. Roll surface to remove minor depressions or irregularities.
- f. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- g. Immediately reseed areas that show bare spots.

END OF SECTION

**Section 13**  
**SITE WATER SUPPLY, GAS SUPPLY AND SANITARY SEWER CONNECTION**

**A. GENERAL**

This work shall include all sitework to provide water, gas and sanitary sewer connections from the existing supply to the new building. Internal water, gas and sanitary shall be by the individual contractors in the respective contracts.

The location of the proposed work and actual extent of the various Contract items are either shown on the Contract Plans or described in the Detailed Specifications. The work to be done under this Contract shall include the furnishing of all labor, materials, equipment and tools necessary to construct the indicated water, gas and sewer pipelines, including all appurtenances, complete and operable, in a satisfactory workmanlike manner and in accordance with the Contract Documents.

The work shall include, but not be limited to, the following:

1. Clearing and grubbing along the line of work.
2. Provision of protection prior to starting work for all landscaping, utilities, structures and facilities which might be damaged if not protected.
3. Removal and stockpiling of topsoil.
4. Removal and storage of bushes, shrubs and trees to be replanted.
5. Removal of paving, landscaping, fences, barriers and obstructions as required.
6. Hauling, unloading and distribution of the pipe fittings and appurtenances.
7. Excavation, including extra depth excavation for bells, joints and proper bedding.
8. Barricades, fencing, lighting, watching and protection of the site.
9. Reconstruction or relocation of other lines, pipes, ducts and utilities as necessary.
10. All sheeting, bracing, shoring and supporting necessary to protect adjoining ground and adjacent structures.
11. Sheeting and shoring necessary for the safety of workmen in the trench and necessary to comply with all applicable safety codes.
12. Pumping, bailing or draining of the trench as required to permit proper execution of the work.
13. Laying of the water, gas and sewer pipeline and installation of all appurtenances, including anchors, cradles, encasement, etc.

14. Connection to other water, gas and sewers as required and including installation of stubs, wyes and service laterals.
15. Tunneling, boring, jacking and the installation of all types of carrier pipe, casing or liner plate.
16. Backfilling and tamping of the pipeline trench.
17. Repair or replacement of all damaged drains, sewers, utilities and structures, including gas lines, water lines, sanitary sewers, storm sewers, oil lines, gasoline lines, electrical conduit and cables, utility poles, culverts, bridges, foundations, driveways, streets and other items as required.
18. Testing of completed pipeline sections for watertight condition.
19. Maintenance of the streets and other surfaces over the trenches and other areas affected by the work.
20. Proper completion of all work in accordance with the Contract Documents.

Any exception to the foregoing requirements will be specifically noted on the Drawings or in the Detailed Specifications.

## **B. GAS SUPPLY PIPING**

1. This Contractor shall install all new gas service line with isolation valves from the existing Gas Meter to the new building (minimum isolation at each end of new line).
2. All gas piping shall be of materials approved by and installed in strict compliance with the requirements of the National Fuel Gas Code, the gas supplier and all applicable codes.
3. All exposed steel piping shall be painted with two coats of Rustoleum, a prime coat and a final yellow coat.
4. Site gas piping shall be SDR-9 HDPE plastic or as required by the gas supplier. Coordinate the installation with gas supplier. Install tracer tape with the line.
5. Notification Tape and Detectable Wire - All installations of non-metallic pipeline shall include the furnishing and installation of identification tape and copper tracing wire (#10 size). This tape shall be constructed of non-degradable plastic at least 6" wide, shall be yellow in color and imprinted in a contrasting color with the words "CAUTION – BURIED GAS LINE BELOW". The tape shall be installed at a depth of twelve to eighteen inches below the surface. Cost is to be included in pipe installation.

## **C. WATER SERVICE LINE**

1. This Contractor shall provide an extension of domestic water service line from the existing water service provided to the municipal offices as shown on the plan.
2. The Contractor shall furnish and install 1" service lines, corporation stops, tapping saddles, curb boxes and curb stops.
3. Service Line Material

### **a. Corporation Stops**

The corporation stops designed for insertion into water mains under pressure and shall be, depending on specified size, Ford Meter Box Company, Inc., F600, F1000 or FB1000, or approved equal. The stops shall be constructed with an inlet and outlet fitting CC thread or flanged compression fittings iron pipe size threads, Type K, when copper service pipes are used. When PVC service pipes are used, the pipe should be Copper Tube Size (CTS) and must be back 100 feet or more and require a vault.

The corporation stops shall be precision fitted and individually lapped ground key stops. The threaded end of the key shall be designed so that tightening of the key as many times as is required for normal adjustment will merely strip the threads instead of breaking the stem. The stop shall be of all bronze construction. Each corporation stop and/or pressure quick tap fitting shall be fully tested in both open and closed position with air pressure under water.

### **b. Curb Stops**

Curb Stops shall be, depending on specified size, Ford Meter Box Company, Inc., B22-333, B22-777, B44-333, B44-777, or approved equal, unless otherwise indicated in the Detailed Specifications. The stops shall be constructed with an inlet and outlet having fitting threads for use with flared copper service tubes, Type K, or plastic (PVC) pipe with the same outside diameter as Type K copper.

### **c. Curb Boxes**

Curb boxes shall be either screw type or sliding type, as specified, PVC with cast iron lid with the word "WATER" cast into it, and shall be Bingham and Taylor Series 200, or approved equal. The curb boxes shall be Type 200 Bingham and Taylor having an extension of 4'0" to 5'6". The shaft shall be 2-1/2" in size. The curb boxes shall be constructed of cast iron.

The screw for the curb box lid shall be made of red brass, be about 17/32" in diameter, be about 1-13/32" long, and have 12 threads to the inch. The curb box lid shall be furnished with the "Water" cast thereon.

d. Copper Pipe

The copper pipe shall be seamless tubing designed for underground water service, and shall be the Type K, as manufactured in accordance with Federal Specification WW-7-799, or the Type K, as manufactured in accordance with the A.S.T.M. Specification B88-47.

The copper tubing shall be in accordance with the following:

Standard Water Tube Size - Inches	Actual O.D. Inches	Theoretical Wt. per foot - pound
3/4"	0.875	0.641
1"	1.125	0.830

e. Service Saddles

For C-900 PVC Pipe style, service saddles shall be AWWA Thread 3/4" to 2" A.Y. McDonald 3825, Brass, Double Strap, Mueller BRRB, Ford 202B, or approved equal.

4. Pipe Anchors and Thrust Blocking

Pipe anchors shall be installed on every line laid at a grade equal to or greater than 15%, and where indicated on the Contract Plans. The Contractor shall block all bends in excess of 10 degrees. All plugs caps, tees, wye branches, and other fittings shall be in accordance with the Detail Drawings. Suitable metal rods or clamps shall be installed to prevent movement of fitting where necessary. The installation of the items will be incidental to the job and should be included in the overall cost of the project.

**C. SANITARY SEWER LATERAL**

1. This Contractor shall provide sanitary sewer lateral from the new building to the existing sanitary sewer lateral as shown on the plan.
2. Unless superseded by Detailed Specifications, Drawings or special conditions or instructions, material used in the construction of sewers or appurtenances shall conform to the following. All sewers and appurtenances shall be manufactured in accordance with the latest applicable specifications as indicated herein. The Contractor shall submit such alternate bids as are required relative to the use of different types of pipe.

a. PVC Gravity Sewer Pipe

PVC Gravity Sewer Pipe shall meet or exceed the requirements of Standard Specifications for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings A.S.T.M. Designation D-3034, latest revision, and as further described herein. The pipe and fittings shall have thicknesses, dimensions and properties as described under the Designation SDR-35. Pipe shall be furnished in standard lengths of twelve and one-half feet with a tolerance of one inch.

All fittings and accessories shall be manufactured and furnished by the pipe manufacturer. Pipe shall be capable of passing the pipe stiffness, pipe flattening, impact resistance and joint tightness tests as described in A.S.T.M. Designation D-3034 and other referenced A.S.T.M. designations. Pipe shall have compression joints conforming to the material, testing and performance requirements of Standard Specifications A.S.T.M. Designation D-1869, latest revision.

All PVC pipe and fittings used on the project shall be certified by the manufacturer to have met the requirements of these Specifications. Each section of pipe shall be marked as indicated in A.S.T.M. Designation D-3034, with the manufacturer's name, wall thickness and type. All PVC pipe must not be stored in areas where it is exposed to extreme temperatures, hot and cold, and direct sunlight. Any material showing discoloration will not be permitted for use in the system.

b. Wye Branches

Branches for connections fitted with suitable stoppers shall be laid at the points and in the positions called for on the Drawings or as directed by the Engineer. Each branch shall be located by the Contractor and its station recorded relative to the downstream manhole.

During the process of laying the pipe, care shall be taken to protect both pipe and joint from disturbance, and the trench shall be kept free of water until the joint shall have set. At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of earth or other materials entering the pipe has passed.

c. Notification Tape and Detectable Wire

All installations of non-metallic pipeline shall include the furnishing and installation of identification tape and copper tracing wire (#10 size). This tape shall be constructed of non-degradable plastic at least 6" wide, shall be green in color and imprinted in a contrasting color with the words "CAUTION – BURIED SEWER LINE BELOW". The tape shall be installed at a depth of twelve to eighteen inches below the surface. Cost is to be included in pipe installation.

d. Testing

The Contractor shall provide a low-pressure air test test to determine the tightness of the lateral sewer joints.

The section of pipe to be tested must be isolated by completely plugging all outlets. All plugs must be braced to prevent slippage and blow-out due to the internal pressure.

One of the plugs must be equipped with an air inlet tap for connection of an air hose. This test should be performed on a pipe which is in a damp condition to minimize loss of air through the pipe wall as a result of air permeability.

When air pressure is applied, it should be monitored and controlled so that at no time will it exceed 5 psig. The air pressure should be maintained between 4.0 and 3.5 psig for a period of at least two minutes in order to stabilize the air temperature. During this period, plugs may be checked for tightness.

After the air temperature has been allowed to stabilize, the air supply is to be disconnected and the pressure allowed to decrease to 3.5 psig. At 3.5 psig a stop watch will be started to determine the time required for the pressure to drop to 2.5 psig.

This time required for a loss of 1.0 psi at an average pressure must be 3 psi greater than the average back pressure of any ground water in order for the test to have significance and, therefore, if the ground water surface is higher than the sewer centerline the air test pressure is to be increased by one psig for each 2.3 feet by which the water surface is higher than the pipe centerline.

The pipeline will pass the low pressure air test if the loss of air is not greater than a rate of 0.0030 cubic feet per minute per square foot of internal pipe surface. The loss of air will be considered acceptable if the time for the pressure to drop one psi is not less than that shown in the following table, for the respective pipe diameters:

ALLOWABLE TIME TABLE

Pipe Size	Time		Pipe Size	Time	
	Min.	Sec.		Min.	Sec.
6"	2	15	36"	17	00
7"	3	18	42"	19	50
8"	3	57	48"	22	40
10"	4	43	54"	25	30
12"	5	40	60"	28	20
15"	7	5	66"	31	10
18"	8	30	72"	34	00
21"	9	50	84"	39	40
24"	11	20	96"	47	00
27"	12	45	108"	51	00
30"	14	10			

If the leakage exceeds these amounts, the Contractor shall determine the cause of the leakage and make such repairs or replacement as found necessary until the sewer is found to comply with the requirements of this hydrostatic test.

**D. Delivery, Handling and Storage**

The Contractor shall be responsible for all materials and equipment furnished by him and shall replace, at his own expense, all such material or equipment found defective in manufacture or damaged in delivery or in handling after delivery. This shall include responsibility for furnishing labor and material required for the replacement of installed material found defective prior to the final acceptance of the work.

The pipe, fittings and other appurtenances shall be hauled to the site from the point of delivery, and unloaded by means that will not result in any damage. Under no circumstances, shall material be dropped from the truck. The pipe and fittings shall always be handled with care to prevent damage when being transported, loaded or unloaded.

The pipe and fittings shall be unloaded and either stored or placed near where they are to be laid in the trench, with the bell or proper ends facing in the direction in which the work will proceed, exercising care and keeping the pipe and fittings free from dirt and foreign material.

END OF SECTION

**SECTION 14**  
**POST-CONSTRUCTION STORMWATER MANAGEMENT FACILITIES**

**A. GENERAL**

1. Scope of Work

The work covered under this section consists of the Contractor furnishing all labor, materials, and equipment necessary to prepare site, grade, construct and install new storm sewers and new stormwater detention bed. This work shall also include the proper implementation of the erosion and sedimentation control plan under the approved NPDES permit for earth disturbance activities for this project.

All work performed and materials used will be in strict compliance with the relevant portions of the Standard and Detailed Specifications, and contractual matters will conform to the Standard contract Provisions of these Specifications.

The Contractor must be thoroughly experienced in this type of work, must be reputable and must recognize the fact that this project will require utmost care in the execution of the work.

All work shall conform, during its progress or on its completion, truly to the lines, levels and grades, and shall be built in a thoroughly substantial and workmanlike manner, in accordance with the plans and directions given from time to time by the Engineer, subject to such modifications and additions as shall be deemed necessary by the Engineer during its execution. In no case shall any work in excess of the plan requirements and Specifications be paid for unless ordered in writing by the Owner or the Engineer.

All references to ASTM and AASHTO specifications apply to the most recent version.

2. Stake-Out

All lines and grades shall conform to the Contract Drawings. Gibson-Thomas Engineering will provide benchmarks and base line layout.

3. Installation

The installation shall be in accordance with good construction practice and the appropriate sections of the Contract Drawings, and specifications.

**B. DETENTION POND SITE PREPARATION**

1. The area to be occupied by the stormwater detention bed will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans.
2. Rubbish and all cleared and grubbed material shall be disposed of in accordance with these specifications.

### C. STRUCTURE BACKFILL

1. Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.
2. Unless specified otherwise on the contract drawings, all stone shall be PennDOT Type #2A. Any street crossings and ditch openings in streets and driveways shall have 100% stone backfill. All piping outside of streets shall be backfilled with acceptable material as defined in the Standard Specifications, after proper stone bedding is installed.
3. Structure backfill may be flowable fill meeting the requirements of Pennsylvania Department of Transportation Form 408, latest revision. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone.
4. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

## D. MATERIALS

1. Earthfill Material
  - a. All on-site earthfill material shall be taken from on-site cut areas wherever the cut material is suitable as fill material. It shall be free of roots, stumps, wood, rubbish, stones greater than six inches, frozen or other objectionable materials.
  - a. Any coal encountered during on-site excavation shall be hauled off-site to a coal receiving facility as part of this work and shall not be used as on-site fill material.

### 3. Sheeting, Bracing and Shoring

All sheeting, bracing and shoring shall be performed according to requirements of the State Department of Labor and Industry, and as may be hereinafter set forth.

### 4. Non-Shrink Grout

Where "non-shrink" grout is called for by the Drawings, or specified herein, it shall be "Embeco Pre-Mixed Grout" as manufactured by the Master Builders Company, "Vibro-Foil Ready-Mixed Grout" as manufactured by Grace Construction Materials, or "Ferrolith G Redi-Mixed Grout" as manufactured by Sonneborn Building Products, Inc., and shall be used in strict conformance with the manufacturer's directions.

### 5. Storm Catch Basins

Storm catch basins shall be standard PennDOT reinforced concrete inlet boxes with Type 'M' structural steel frame and structural steel bicycle-safe grate rated for H-25 traffic loads. Catch basins greater than 4 feet in depth will require steps spaced at 12" on center vertically. Unless specified otherwise, catch basins shall NOT have knock-out walls, but shall have all openings for pipes precast at the appropriate sizes and depths as per the contract drawings.

All pipes entering structures shall be cut flush with the inside face of the structure, unless otherwise specified by the Engineer. The cut ends of the pipe and the surface of the structure shall be properly rounded and finished so that there will be no protrusion, ragged edges or imperfections that will impede the flow of water or affect the hydraulic characteristics of the installation.

Coring into existing inlets, as well as installing additional pipe to facilitate the installation of new inlets shall be incidental to the Contract.

All pipe connections must be grouted at their entry into the respective structure. Only full sections of pipe shall be used where entering a structure which will be exposed to view, such as endwalls, headwalls, end sections, etc.

### 6. Pipe Conduit

- a. All pipes shall be circular in cross section.
- b. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

#### c. Connections

All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, pre-punched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable.

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

All pipe connections into storm catch basins, manholes, endwall or other concrete structures shall have poured concrete collars around the exterior interfaces between the pipe and the structure. The concrete collar shall be 12 inches thick and project a minimum of 12 inches from all sides of the pipe.

d. Bedding

The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

e. Backfilling shall conform to specified "Structure Backfill" requirements.

f. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

g. Reinforced Concrete Pipe

All of the following criteria shall apply for reinforced concrete pipe:

- 1) Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
- 2) Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding / cradle for their entire length. This bedding / cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.



Unless specified otherwise, structure shall NOT have knock-out walls, but shall have all openings for pipes precast at the appropriate sizes and depths as per the contract drawings.

9. Geotextile Fabric

Geotextile fabric shall be used under rock riprap for the stormwater detention pond. The geotextile fabric shall be Class 4, Type A non-woven for media separation and shall meet the requirements of the PennDOT Publication 408, latest revision.

10. Detention Basin Liner

Impervious Liner shall be used enveloping the AASHTO #57 stone bed of the stormwater detention bed. The liner shall be minimum 30 MIL non-reinforced Polyvinyl chloride (PVC) with 8-ounce AASHTO M288 Class 2 non-woven geotextile underlayment.

Liner may be field solvent welded, taped or field heat welded.

Pipe "boots" shall be used to seal pipe penetrations through the liner. Boots may be prefabricated by the liner fabricator or field fabricated by the contractor. The boot shall be solvent cemented, heat welded or taped to the liner. A pipe clamp is not to be used as the only means to seal the boot around the pipe. Seaming and sealing pipe boots at low temperatures (32° F minimum) requires preheating of the material.

11. Detention Basin Stone Media

The stone media in the infiltration trench and around the underdrain of the stormwater detention pond shall be AASHTO #57 limestone, cleaned and washed to remove all fines and soil particulates.

12. Detention Basin Perforated HDPE Pipe

Pipe shall comply with Plastic Pipe specifications.

The pipe shall have Class II perforations which shall be located in the outside valleys of the corrugations, be circular and/or slotted and evenly spaced around the circumference and length of the pipe. The water inlet area shall be no less than 0.945 in<sup>2</sup>/ft (20 cm<sup>2</sup>/m) for pipe diameters 4- through 10-inch (100 - 250mm), 1.42 in<sup>2</sup>/ft (30 cm<sup>2</sup>/m) for pipe diameters 12- through 18-inch (300 - 450 mm) and 1.89 in<sup>2</sup>/ft (40 cm<sup>2</sup>/m) for pipe diameters larger than and equal to 24 inches (600 mm).

13. Rock Riprap

Rock riprap shall meet the requirements of the Pennsylvania Department of Transportation or State Materials Testing Agency. Rock riprap shall be non-scaling and weather-resistant to freeze-thaw cycles.

#### E. CARE OF WATER DURING CONSTRUCTION

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work.

After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works.

The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

## F. STABILIZATION

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with PA DEP Standards and Specifications for erosion and sedimentation control.

END OF SECTION

## **SECTION 017419**

### **CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

#### **PART 1 GENERAL**

##### **1.01 WASTE MANAGEMENT REQUIREMENTS**

- A Owner requires that this project generate the least amount of trash and waste possible.
- B Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
  - 1. Aluminum and plastic beverage containers.
  - 2. Corrugated cardboard.
  - 3. Wood pallets.
  - 4. Clean dimensional wood.
  - 5. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
  - 6. Glass.
  - 7. Gypsum drywall and plaster.
  - 8. Plastic buckets.
- E Contractor Reporting Responsibilities: Submit periodic Waste Disposal Reports; report landfill disposal, incineration, recycling, salvage, and reuse regardless of to whom the cost or savings accrues; use the same units of measure on required reports.
- F Develop and follow a Waste Management Plan designed to implement these requirements.
- G Methods of trash/waste disposal that are not acceptable are:
  - 1. Burning on the project site.
  - 2. Burying on the project site.
  - 3. Dumping or burying on other property, public or private.
  - 4. Other illegal dumping or burying.
- H Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

##### **1.02 DEFINITIONS**

- A Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

- C Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I Return: To give back reusable items or unused products to vendors for credit.
- J Reuse: To reuse a construction waste material in some manner on the project site.
- K Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

### **1.03 SUBMITTALS**

- A Submit Waste Management Plan within 30 Calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.
- B Waste Management Plan: Include the following information:
  1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
  2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
  3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
    - a. List each material proposed to be salvaged, reused, or recycled.
    - b. List the local market for each material.
  4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.

5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
  6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
- C Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
  2. Submit Report on a form acceptable to Owner.
  3. Landfill Disposal: Include the following information:
    - a. Identification of material.
    - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
    - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
    - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
  4. Incinerator Disposal: Include the following information:
    - a. Identification of material.
    - b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
    - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
    - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
  5. Recycled and Salvaged Materials: Include the following information for each:
    - a. Identification of material, including those retrieved by installer for use on other projects.
    - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
    - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
    - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
    - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
  6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

## **PART 3 EXECUTION**

### **2.01 WASTE MANAGEMENT PLAN IMPLEMENTATION**

- A Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- C Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D Meetings: Discuss trash/waste management goals and issues at project meetings.
  - 1. Prebid meeting.
  - 2. Preconstruction meeting.
  - 3. Regular job-site meetings.
- E Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
  - 1. As a minimum, provide:
    - a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
    - b. Separate dumpsters for each category of recyclable.
    - c. Recycling bins at worker lunch area.
  - 2. Provide containers as required.
  - 3. Provide adequate space for pick-up and delivery and convenience to subcontractors.
  - 4. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

**END OF SECTION**

**SECTION 033000**  
**CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Concrete formwork.
- B Floors and slabs on grade.
- C Concrete reinforcement.
- D Joint devices associated with concrete work.
- E Concrete curing.

**1.02 REFERENCE STANDARDS**

- A ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary 2019 (Reapproved 2022).
- B ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide 2022.
- C ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction 2015.
- D ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).
- E ACI PRC-305 - Guide to Hot Weather Concreting 2020.
- F ACI PRC-306 - Guide to Cold Weather Concreting 2016.
- G ACI PRC-308 - Guide to External Curing of Concrete 2016.
- H ACI SPEC-301 - Specifications for Concrete Construction 2020.
- I ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.
- J ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement 2019.
- K ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2022.
- L ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- M ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.
- N ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.
- O ASTM C150/C150M - Standard Specification for Portland Cement 2022.
- P ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.
- Q ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2018.
- R ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2018a.
- S ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs 2017.

### **1.03 SUBMITTALS**

- A Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- B Mix Design: Submit proposed concrete mix design.
  - 1. Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.
  - 2. Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.
- C Test Reports: Submit report for each test or series of tests specified.
- D Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

### **1.04 QUALITY ASSURANCE**

- A Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
- B Follow recommendations of ACI PRC-305 when concreting during hot weather.
- C Follow recommendations of ACI PRC-306 when concreting during cold weather.

## **PART 2 PRODUCTS**

### **2.01 FORMWORK**

- A Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
  - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
  - 2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
  - 3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
  - 4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

### **2.02 REINFORCEMENT MATERIALS**

- A Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
  - 1. Type: Deformed billet-steel bars.
  - 2. Finish: Galvanized in accordance with ASTM A767/A767M, Class I, unless otherwise indicated.
- B Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
  - 1. Form: Coiled Rolls.
  - 2. WWR Style: As indicated on drawings.
- C Reinforcement Accessories:
  - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
  - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
  - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

## **2.03 CONCRETE MATERIALS**

- A Cement: ASTM C150/C150M, Type I - Normal Portland type.
  - 1. Acquire cement for entire project from same source.
- B Fine and Coarse Aggregates: ASTM C33/C33M.
  - 1. Acquire aggregates for entire project from same source.
- C Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

## **2.04 ADMIXTURES**

- A Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

## **2.05 ACCESSORY MATERIALS**

- A Underslab Vapor Retarder:
  - 1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is prohibited.
  - 2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.

## **2.06 BONDING AND JOINTING PRODUCTS**

## **2.07 CURING MATERIALS**

- A Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
- B Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.

## **2.08 CONCRETE MIX DESIGN**

- A Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.
- B Concrete Strength (as indicated on S100): Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.
  - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- C Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.

## **2.09 MIXING**

- A On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A Verify lines, levels, and dimensions before proceeding with work of this section.

### **3.02 PREPARATION**

- A Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.
- B Verify that forms are clean and free of rust before applying release agent.
- C Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
  - 1. Granular Fill Over Vapor Retarder: Cover vapor retarder with compactible granular fill as indicated on drawings. Do not use sand.

### **3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS**

- A Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- C Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

### **3.04 PLACING CONCRETE**

- A Place concrete in accordance with ACI PRC-304.
- B Place concrete for floor slabs in accordance with ACI PRC-302.1.
- C Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- E Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- F Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

### **3.05 SLAB JOINTING**

- A Locate joints as indicated on drawings.
- B Anchor joint fillers and devices to prevent movement during concrete placement.
- C Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less

than one quarter (1/4) the depth of the slab.

### **3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES**

- A Maximum Variation of Surface Flatness (FF) and levelness (FL):
  - 1. Exposed Concrete Floors: FF = 35, FL = 25.
- B Correct the slab surface if tolerances are less than specified.
- C Correct defects by grinding or by removal and replacement of the defective work.  
Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

### **3.07 CONCRETE FINISHING**

- A Repair surface defects, including tie holes, immediately after removing formwork.
- B Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
  - 1. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.
- D In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

### **3.08 CURING AND PROTECTION**

- A Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
  - 1. Normal concrete: Not less than seven days.
- C Surfaces Not in Contact with Forms:
  - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
  - 2. Final Curing: Begin after initial curing but before surface is dry.

### **3.09 FIELD QUALITY CONTROL**

- A Provide free access to concrete operations at project site and cooperate with appointed firm.
- B Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- C Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- D Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
- E Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

- F Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

### **3.10 DEFECTIVE CONCRETE**

- A Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- B Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

### **3.11 PROTECTION**

- A Do not permit traffic over unprotected concrete floor surface until fully cured.

**END OF SECTION**

**SECTION 040511**  
**MASONRY MORTARING AND GROUTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Mortar for masonry.
- B Grout for masonry.

**1.02 RELATED REQUIREMENTS**

- A Section 042000 - Unit Masonry: Installation of mortar and grout.

**1.03 REFERENCE STANDARDS**

- A ASTM C5 - Standard Specification for Quicklime for Structural Purposes 2018.
- B ASTM C91/C91M - Standard Specification for Masonry Cement 2023.
- C ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2022a.
- D ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.
- E ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.
- F ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.
- G ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.
- H ASTM C476 - Standard Specification for Grout for Masonry 2023.
- I ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry 2020.
- J ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry 2019a.
- K TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

**1.04 SUBMITTALS**

- A Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
- B Reports: Submit reports on grout indicating compliance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.
- C Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

**1.05 QUALITY ASSURANCE**

- A Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

## **1.07 FIELD CONDITIONS**

- A Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

## **PART 2 PRODUCTS**

### **2.01 MORTAR AND GROUT APPLICATIONS**

- A At Contractor's option, mortar and grout may be field-mixed from packaged dry materials or made from factory premixed dry materials with addition of water only.
- B Mortar Mix Designs: ASTM C270, Property Specification.
  - 1. Masonry below grade and in contact with earth: Type S.
  - 2. Exterior, Loadbearing Masonry: Type N.
  - 3. Exterior, Non-loadbearing Masonry: Type N.
  - 4. Interior, Loadbearing Masonry: Type N.
  - 5. Interior, Non-loadbearing Masonry: Type O.
- C Grout Mix Designs:
  - 1. Bond Beams: 2500 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
    - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
    - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

### **2.02 MATERIALS**

- A Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
  - 1. Color: Standard gray.
- B Portland Cement: ASTM C150/C150M.
  - 1. Type: Type I - Normal; ASTM C150/C150M.
  - 2. Color: Standard gray.
- C Masonry Cement: ASTM C91/C91M.
  - 1. Type: Type N; ASTM C91/C91M.
- D Hydrated Lime: ASTM C207, Type S.
- E Quicklime: ASTM C5, non-hydraulic type.
- F Mortar Aggregate: ASTM C144.
- G Grout Aggregate: ASTM C404.
- H Water: Clean and potable.

### **2.03 MORTAR MIXING**

- A Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.
- B Maintain sand uniformly damp immediately before the mixing process.
- C Do not use anti-freeze compounds to lower the freezing point of mortar.
- D If water is lost by evaporation, re-temper only within two hours of mixing.

## **2.04 GROUT MIXING**

- A Mix grout in accordance with ASTM C94/C94M.
- B Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A Install mortar and grout to requirements of section(s) in which masonry is specified.
- B Work grout into masonry cores and cavities to eliminate voids.
- C Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.
- D Do not displace reinforcement while placing grout.
- E Remove excess mortar from grout spaces.

### **3.02 GROUTING**

- A Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.
- B Low-Lift Grouting:
  - 1. Limit height of pours to 16 inches.
  - 2. Limit height of masonry to 16 inches above each pour.
  - 3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
  - 4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

### **3.03 FIELD QUALITY CONTROL**

- A Test and evaluate grout in accordance with ASTM C1019 procedures.

**END OF SECTION**

**SECTION 042000  
UNIT MASONRY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Concrete block.
- B Clay facing brick.
- C Mortar and grout.
- D Reinforcement and anchorage.
- E Flashings.
- F Accessories.

**1.02 RELATED REQUIREMENTS**

- A Section 040511 - Masonry Mortaring and Grouting.
- B Section 079200 - Joint Sealants: Sealing control and expansion joints.

**1.03 REFERENCE STANDARDS**

- A ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.
- B ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.
- C ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement 2022.
- D ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2022.
- E ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units 2022.
- F ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units 2022.
- G ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale) 2022.
- H BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing 2017.
- I BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls 2017.
- J TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

**1.04 SUBMITTALS**

- A Product Data: Provide data for masonry units and fabricated wire reinforcement.
- B Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.
- C Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

**1.05 QUALITY ASSURANCE**

- A Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

## **PART 2 PRODUCTS**

### **2.01 CONCRETE MASONRY UNITS**

- A Concrete Block: Comply with referenced standards and as follows:
  - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
  - 2. Load-Bearing Units: ASTM C90, normal weight.
    - a. Minimum compressive strength on net area = 2800 psi (@28 days).
    - b. Hollow block.
    - c. Exposed Faces: Manufacturer's standard color and texture where indicated.
    - d. Manufacturers:
      - 1) Beavertown Block Co, Inc
      - 2) Nitterhouse Masonry Products, LLC
      - 3) York Building Products
      - 4) Or Approved Equal.
  - 3. Nonloadbearing Units: ASTM C129.
    - a. Hollow block, as indicated.
    - b. Normal weight.
    - c. Manufacturers:
      - 1) Same as above.

### **2.02 BRICK UNITS**

- A Manufacturers:
  - 1. Belden Brick: [www.beldenbrick.com/#sle](http://www.beldenbrick.com/#sle).
  - 2. Glen-Gery Brick.
  - 3. Endicott Clay Products Co: [www.endicott.com/#sle](http://www.endicott.com/#sle).
  - 4. Or Approved Equal.
- B Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
  - 1. Color and texture: As selected during submittal approval.
  - 2. Nominal size: As indicated on drawings.
  - 3. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.

### **2.03 MORTAR AND GROUT MATERIALS**

- A Mortar and Grout: As specified in Section 040511.

### **2.04 REINFORCEMENT AND ANCHORAGE**

- A Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; galvanized.
- B Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- C Single Wythe Joint Reinforcement: ASTM A951/A951M.
  - 1. Type: Truss or ladder.

2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
  3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
- D Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
1. Type: Truss, ladder, or tab.
  2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
  3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

## **2.05 FLASHINGS**

- A Metal Flashing Materials:
- B Combination Asphaltic Flashing Materials - Copper:
1. Copper/Asphalt Flashing: 3 oz/sq ft copper sheet coated with elastic asphalt compound on both sides.

## **2.06 ACCESSORIES**

- A Joint Filler: Closed cell rubber; oversized 50 percent to joint width; self expanding; in maximum lengths available.
- B Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
- C Weeps:
1. Type: Molded PVC grilles, insect resistant.
- D Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that field conditions are acceptable and are ready to receive masonry.
- B Verify that related items provided under other sections are properly sized and located.
- C Verify that built-in items are in proper location, and ready for roughing into masonry work.

### **3.02 PREPARATION**

- A Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

### **3.03 COLD AND HOT WEATHER REQUIREMENTS**

- A Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

### **3.04 COURSING**

- A Establish lines, levels, and coursing indicated. Protect from displacement.
- B Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C Concrete Masonry Units:
1. Bond: Running.

2. Coursing: One unit and one mortar joint to equal 8 inches.
  3. Mortar Joints: Concave.
- D Brick Units:
1. Bond: Running.
  2. Coursing: Three units and three mortar joints to equal 8 inches.
  3. Mortar Joints: Concave.

### **3.05 PLACING AND BONDING**

- A Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B Lay hollow masonry units with face shell bedding on head and bed joints.
- C Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D Remove excess mortar and mortar smears as work progresses.
- E Interlock intersections and external corners.
- F Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H In grouted and/or reinforced masonry walls, use masonry units with cores that align vertically. Provide continuous unobstructed cells for reinforcement placement and grouting.

### **3.06 WEEPS/CAVITY VENTS**

- A Install weeps in veneer and cavity walls at 24 inches on center horizontally on top of through-wall flashing at bottom of walls.

### **3.07 CAVITY MORTAR CONTROL**

- A Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

### **3.08 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY**

- A Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C Place continuous joint reinforcement in first and second joint below top of walls.
- D Lap joint reinforcement ends minimum 6 inches.
- E Vertical reinforcement shall be installed in accordance with TMS 402/602.

### **3.09 CONTROL AND EXPANSION JOINTS**

- A Do not continue horizontal joint reinforcement through control or expansion joints.

### **3.10 BUILT-IN WORK**

- A As work progresses, install built-in fabricated metal frames and other items to be built into the work and furnished under other sections.
- B Install built-in items plumb, level, and true to line.

### **3.11 TOLERANCES**

- A Install masonry within the site tolerances found in TMS 402/602.
- B Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- C Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- D Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- F Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

### **3.12 CLEANING**

- A Remove excess mortar and mortar droppings.
- B Replace defective mortar. Match adjacent work.
- C Clean soiled surfaces with cleaning solution.
- D Use non-metallic tools in cleaning operations.

### **3.13 PROTECTION**

- A Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

**END OF SECTION**

**SECTION 055000**  
**METAL FABRICATIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Shop fabricated steel items.

**1.02 REFERENCE STANDARDS**

- A ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- B ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.
- C ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- D ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates 2018.
- E ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2021.
- F AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.
- G AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).
- H AWS D1.2/D1.2M - Structural Welding Code - Aluminum 2014, with Errata (2020).
- I SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 2004.
- J SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic) 2019.
- K SSPC-SP 2 - Hand Tool Cleaning 2018.

**1.03 SUBMITTALS**

- A Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

**1.04 QUALITY ASSURANCE**

- A Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

**PART 2 PRODUCTS**

**2.01 MATERIALS - STEEL**

- A Steel Sections: ASTM A36/A36M.
- B Plates: ASTM A283/A283M.
- C Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- D Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- E Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- F Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

- G Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

## **2.02 FABRICATION**

- A Fit and shop assemble items in largest practical sections, for delivery to site.
- B Fabricate items with joints tightly fitted and secured.
- C Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## **2.03 FABRICATED ITEMS**

- A Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
- B Door Frames for Overhead Door Openings: Channel sections; prime paint finish.

## **2.04 FINISHES - STEEL**

- A Prime paint steel items.
  - 1. Exceptions: Galvanize items to be embedded in concrete and items to be embedded in masonry.
- B Prepare surfaces to be primed in accordance with SSPC-SP2.
- C Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D Prime Painting: One coat.
- E Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A Clean and strip primed steel items to bare metal where site welding is required.
- B Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

### **3.03 INSTALLATION**

- A Install items plumb and level, accurately fitted, free from distortion or defects.
- B Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C Obtain approval prior to site cutting or making adjustments not scheduled.

**END OF SECTION**

**SECTION 055213**  
**PIPE AND TUBE RAILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Wall mounted handrails.
- B Free-standing railings at steps.

**1.02 RELATED REQUIREMENTS**

- A Section 033000 - Cast-in-Place Concrete: Placement of anchors in concrete.
- B Section 099123 - Interior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.
- B ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.
- C ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings 2020.
- D ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube 2022.
- E ASTM B429/B429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube 2020.
- F ASTM B483/B483M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Tube and Drawn Pipe for General Purpose Applications 2021.
- G ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings 2021.
- H AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.
- I AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).
- J SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 2004.

**1.04 SUBMITTALS**

- A Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

**PART 2 PRODUCTS**

**2.01 RAILINGS - GENERAL REQUIREMENTS**

- A Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935
- C Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

- D Dimensions: See drawings for configurations and heights.
  - 1. Two pipe rail system: 1-1/2 inches diameter, round.
  - 2. Handrails: 1-1/2 inches diameter, round.
  - 3. Handrail Wall Bracket: Provide handrail mounting bracket to wall similar to Julius Blum & Co 622 or Approved Equal.
- E Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
  - 1. For anchorage to concrete, provide inserts to be cast into concrete, for welding anchors.
  - 2. For anchorage to stud walls, provide backing plates, for bolting anchors.
- F Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.
- G Welded and Brazed Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
  - 1. Ease exposed edges to a small uniform radius.
  - 2. Welded Joints:
    - a. Carbon Steel: Perform welding in accordance with AWS D1.1/D1.1M.

## **2.02 ALUMINUM MATERIALS**

- A Aluminum Pipe: Schedule 40; ASTM B429/B429M, ASTM B241/B241M, or ASTM B483/B483M.
- B Welding Fittings: No exposed fasteners; cast aluminum.
- C Exposed Fasteners: No exposed bolts or screws.

## **2.03 STEEL RAILING SYSTEM**

- A Steel Pipe: ASTM A53/A53M Grade B Schedule 80, black finish.
- B Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
- C Exposed Fasteners: No exposed bolts or screws.
- D Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- E Field Finish Painting: Field finish paint steel railing components per Specification Section 099123 Interior Painting.

## **2.04 FABRICATION**

- A Accurately form components to suit specific project conditions and for proper connection to building structure.
- B Fit and shop assemble components in largest practical sizes for delivery to site.
- C Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D Welded Joints:

1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
  2. Interior Components: Continuously seal joined pieces by continuous welds.
  3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E Weld connections that cannot be shop welded due to size limitations.
1. Weld in accordance with AWS D1.1/D1.1M.
  2. Match shop welding and bolting.
  3. Clean welds, bolted connections, and abraded areas.
  4. Touch up shop primer and factory-applied finishes.
  5. Repair galvanizing with galvanizing repair paint per ASTM A780/A780M.

## **2.05 ALUMINUM FINISHES**

- A Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A Clean and strip primed steel items to bare metal where site welding is required.
- B Supply items required to be cast into concrete with setting templates, for installation as work of other sections.
- C Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

### **3.03 INSTALLATION**

- A Install in accordance with manufacturer's instructions.
- B Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C Anchor railings securely to structure.
- D Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.
- E Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

### **3.04 TOLERANCES**

- A Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B Maximum Offset From True Alignment: 1/4 inch.
- C Maximum Out-of-Position: 1/4 inch.

**END OF SECTION**

## **SECTION 061000 ROUGH CARPENTRY**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Structural dimension lumber framing.
- B Nonstructural dimension lumber framing.
- C Rough opening framing for doors, windows, and roof openings.
- D Sheathing.
- E Subflooring.
- F Preservative treated wood materials.
- G Miscellaneous framing and sheathing.
- H Concealed wood blocking, nailers, and supports.

#### **1.02 RELATED REQUIREMENTS**

- A Section 061753 - Shop-Fabricated Wood Trusses.

#### **1.03 REFERENCE STANDARDS**

- A ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2023.
- B AWP A U1 - Use Category System: User Specification for Treated Wood 2022.
- C PS 1 - Structural Plywood 2019.
- D PS 2 - Performance Standard for Wood Structural Panels 2018.
- E PS 20 - American Softwood Lumber Standard 2021.

#### **1.04 SUBMITTALS**

- A Product Data: Provide technical data on wood preservative materials and application instructions.
- B Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

### **PART 2 PRODUCTS**

#### **2.01 GENERAL REQUIREMENTS**

- A Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
  - 1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
  - 2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at [www.alsc.org](http://www.alsc.org), and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

## **2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS**

- A Sizes: Nominal sizes as indicated on drawings, S4S.
- B Moisture Content: S-dry or MC19.
- C Stud Framing (2 by 2 through 2 by 8 ):
  - 1. Species: Allowed under referenced grading rules and as indicated on structural drawings.
  - 2. Grade: Standard.
- D Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16 ):
  - 1. Machine stress-rated (MSR) as follows and as indicated on structural drawings:
    - a. Fb-single; minimum extreme fiber stress in bending: 1350 psi.
  - 2. Species: Allowed under grading rules and as indicated on structural drawings.
- E Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
  - 1. Lumber: S4S, No. 2 or Standard Grade.
  - 2. Boards: Standard or No. 3.

## **2.03 STRUCTURAL COMPOSITE LUMBER**

- A Structural Composite Lumber: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
  - 1. Beams and Lintels: Use laminated veneer lumber, laminated strand lumber, or parallel strand lumber with manufacturer's published modulus of elasticity, E: as indicated on structural drawings psi, minimum.

## **2.04 CONSTRUCTION PANELS**

- A Subfloor/Underlayment Combination: PS 1 or PS 2 type, rated Single Floor.
  - 1. Bond Classification: Exposure 1.
  - 2. Bond Classification: Exposure 1.
  - 3. Span Rating: 48.
  - 4. Performance Category: 1-1/8 PERF CAT.
  - 5. Edges: Tongue and groove.
- B Roof Sheathing: Oriented strand board wood structural panel; PS 2.
  - 1. Grade: Structural 1 Sheathing.
  - 2. Bond Classification: Exposure 1.
  - 3. Performance Category: 5/8 PERF CAT.
  - 4. Span Rating: 40/20.
  - 5. Edges: Square.
- C Wall Sheathing: PS 2 type.
  - 1. Bond Classification: Exterior.
  - 2. Grade: Structural I Sheathing.
  - 3. Span Rating: 24.
  - 4. Performance Category: 5/16 PERF CAT.
  - 5. Edge Profile: Square edge.

## **2.05 ACCESSORIES**

- A Fasteners and Anchors:

1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
- B Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
- C Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
- D Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

## **2.06 FACTORY WOOD TREATMENT**

- A Treated Lumber and Plywood: Comply with requirements of AWWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
  1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWPA standards.
- B Preservative Treatment:
  1. Products:
    - a. Lonza Group: [www.wolmanizedwood.com/#sle](http://www.wolmanizedwood.com/#sle).
    - b. Koppers Performance Chemicals, Inc: [www.koppersperformancechemicals.com/#sle](http://www.koppersperformancechemicals.com/#sle).
    - c. Viance, LLC; Preserve ACQ: [www.treatedwood.com/#sle](http://www.treatedwood.com/#sle).
  2. Preservative Pressure Treatment of Lumber Above Grade: AWWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
    - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
    - b. Treat lumber in contact with masonry or concrete.
    - c. Treat lumber in other locations as indicated.
  3. Preservative Pressure Treatment of Lumber in Contact with Soil: AWWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative.
    - a. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- B Coordinate installation of rough carpentry members specified in other sections.

### **3.02 INSTALLATION - GENERAL**

- A Select material sizes to minimize waste.
- B Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

### **3.03 FRAMING INSTALLATION**

- A Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C Install structural members full length without splices unless otherwise specifically detailed.
- D Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes.
- E Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

### **3.04 BLOCKING, NAILERS, AND SUPPORTS**

- A Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- C Provide the following specific nonstructural framing and blocking:
  - 1. Cabinets and shelf supports.
  - 2. Wall brackets.
  - 3. Handrails.
  - 4. Grab bars.
  - 5. Towel and bath accessories.
  - 6. Chalkboards and marker boards.

### **3.05 INSTALLATION OF CONSTRUCTION PANELS**

- A Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.
- B Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
  - 1. Nail panels to framing; staples are not permitted.
- C Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails or screws.

### **3.06 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.

### **3.07 CLEANING**

- A Waste Disposal: See Section 017419 - Construction Waste Management and Disposal.
  - 1. Comply with applicable regulations.
  - 2. Do not burn scrap on project site.
  - 3. Do not burn scraps that have been pressure treated.
  - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.
- B Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- C Prevent sawdust and wood shavings from entering the storm drainage system.

**END OF SECTION**

## **SECTION 061733 WOOD I-JOISTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Wood I-joists for floor framing.
- B Bridging, bracing, and anchorage.
- C Framing for openings.

#### **1.02 RELATED REQUIREMENTS**

- A Section 061000 - Rough Carpentry: Installation requirements for miscellaneous framing.

#### **1.03 REFERENCE STANDARDS**

- A PS 2 - Performance Standard for Wood Structural Panels 2018.

#### **1.04 DESIGN REQUIREMENTS**

- A Design Floor Live Load: 125 lbs/sq ft with deflection limited to 1/480 of span.

#### **1.05 SUBMITTALS**

- A Product Data: Manufacturer's literature describing materials, dimensions, allowable spans and spacings, bearing and anchor details, bridging and bracing requirements, and installation instructions; identify independent inspection agency.
- B Shop Drawings: Indicate sizes and spacing of joists, bracing and bridging, bearing stiffeners, holes to be cut (if any), and framed openings between joists.
- C Certificate: Certification by joist manufacturer that products delivered are of the same design and construction as those evaluated by the independent inspection agency.

#### **1.06 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A Deliver products to site in manufacturer's original packaging with manufacturer's name and product identification intact and legible.
- B Protect products from damage due to weather and breakage.
- C Protect joists from warping or other distortion by stacking in upright position, braced to resist movement, with air circulation under coverings and around stacks.
- D Handle individual joists in the upright position.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A Wood I-Joists: Solid lumber top and bottom flanges and oriented strand board (OSB) webs bonded together with structural adhesive, with published span rating to meet project requirements.
  - 1. Span Rating: Established and monitored in accordance with ASTM D5055 by independent inspection agency.
  - 2. Oriented Strand Board: Comply with PS 2.
  - 3. Adhesive: Tested for wet/exterior service in accordance with ASTM D2559.
  - 4. Depth: As indicated on drawings.

5. Fabrication Tolerances:
    - a. Flange Width: Plus/minus 1/32 inch.
    - b. Flange Thickness: Minus 1/16 inch.
    - c. Joist Depth: Plus 0, minus 1/8 inch.
  6. Marking: Mark each piece with depth, joist spacing, and allowable span for joist spacing.
- B Wood-Based Components:
1. Wood fabricated from old growth timber is not permitted.
- C Joist Bridging: Type, size and spacing recommended by joist manufacturer.
- D Fasteners: Electrogalvanized steel, type to suit application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that supports and openings are ready to receive joists.
- B Verify that field measurements are as indicated on shop drawings.

### **3.02 PREPARATION**

- A Coordinate placement of bearing items.

### **3.03 ERECTION**

- A Install joists in accordance with manufacturer's instructions.
- B Set structural members level and plumb, in correct position.
- C Make provisions for erection loads and for sufficient temporary bracing to maintain structure plumb and in true alignment until completion of erection and installation of permanent bracing.
- D Do not field cut or alter structural members without approval of manufacturer.
- E Install permanent bridging and bracing and web blocking.
- F Install headers and supports to frame openings required.
- G Frame openings between joists with lumber in accordance with Section 061000.
- H Coordinate installation of sheathing/decking with work of this section.

### **3.04 TOLERANCES**

- A Framing Members: 1/2 inch maximum, from true position.

**END OF SECTION**

**SECTION 061753**  
**SHOP-FABRICATED WOOD TRUSSES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Shop-fabricated wood trusses.
- B Truss bridging.

**1.02 RELATED REQUIREMENTS**

- A Section 061000 - Rough Carpentry: Material requirements for blocking, bridging, plates, and miscellaneous framing.

**1.03 REFERENCE STANDARDS**

- A ANSI/TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction 2014.
- B ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- C SBCA (BCSI) - Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses 2018 (Updated 2020).
- D TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses 1989.
- E WWPA G-5 - Western Lumber Grading Rules 2021.

**1.04 SUBMITTALS**

- A Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.
- B Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
  - 1. Include identification of engineering software used for design.
  - 2. Provide shop drawings stamped or sealed by design engineer.

**1.05 QUALITY ASSURANCE**

- A Designer Qualifications: Perform design by or under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
- B Fabricator Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A Handle trusses in accordance with SBCA (BCSI).
- B Store trusses in vertical position resting on bearing ends.

**PART 2 PRODUCTS**

**2.01 TRUSSES**

- A Wood Trusses: Design and fabricate trusses in accordance with ANSI/TPI 1 and to achieve specified design requirements indicated.
  - 1. Design and fabricate temporary bracing in accordance with TPI DSB-89.

2. Species and Grade: Douglas Fir, WWP A G-5 Grade No. 2 or better.
3. Connectors: Steel plate.
4. Structural Design: Comply with applicable code for structural loading criteria.
5. Roof Deflection: 1/240, maximum.

## **2.02 MATERIALS**

- A Lumber:
  1. Moisture Content: Between 7 and 9 percent.
  2. Lumber fabricated from old growth timber is not permitted.
- B Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.
- C Truss Bridging: Type, size and spacing recommended by truss manufacturer.

## **2.03 ACCESSORIES**

- A Wood Blocking, Bridging, Plates, and Miscellaneous Framing: As specified in Section 061000.
- B Fasteners: Electrogalvanized steel, type to suit application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that field measurements are as indicated on shop drawings.
- B Verify that supports and openings are ready to receive trusses.

### **3.02 PREPARATION**

- A Coordinate placement of bearing items.

### **3.03 ERECTION**

- A Install trusses in accordance with manufacturer's instructions, SBCA (BCSI); maintain a copy of applicable documents on site until installation is complete.
- B Set members level and plumb, in correct position.
- C Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.
- D Do not field-cut or alter wood trusses without approval of manufacturer.
- E Install permanent bridging and bracing.
- F Install headers and supports to frame openings required.
- G Coordinate placement of decking with work of this section.

### **3.04 TOLERANCES**

- A Framing Members: 1/2 inch maximum, from true position.

**END OF SECTION**

**SECTION 064100**  
**ARCHITECTURAL WOOD CASEWORK**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Specially fabricated cabinet units.
- B Countertops.
- C Hardware.

**1.02 RELATED REQUIREMENTS**

- A Section 123600 - Countertops.

**1.03 REFERENCE STANDARDS**

- A ANSI A208.1 - American National Standard for Particleboard 2022.
- B ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications 2022.
- C AWI (QCP) - Quality Certification Program Current Edition.
- D AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- E AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- F BHMA A156.9 - Cabinet Hardware 2020.
- G NEMA LD 3 - High-Pressure Decorative Laminates 2005.

**1.04 SUBMITTALS**

- A Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  - 1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- B Product Data: Provide data for hardware accessories.
- C Samples: Submit actual sample items of proposed pulls, demonstrating hardware design, quality, and finish.
- D Certificate: Submit labels and certificates required by quality assurance and quality control programs.

**1.05 QUALITY ASSURANCE**

- A Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
  - 1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- B Quality Certification:
  - 1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: [www.awiqcp.org/#sle](http://www.awiqcp.org/#sle).
  - 2. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
  - 3. Provide designated labels on shop drawings as required by certification program.

4. Provide designated labels on installed products as required by certification program.
5. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
6. Replace, repair, or rework all work for which certification is refused.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A Protect units from moisture damage.

#### **1.07 FIELD CONDITIONS**

- A During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

### **PART 2 PRODUCTS**

#### **2.01 CABINETS**

- A Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B Plastic Laminate Faced Cabinets: Custom grade.

#### **2.02 PANEL CORE MATERIALS**

- A Particleboard: Composite panel composed of cellulosic particles, additives, and bonding system; comply with ANSI A208.1.
- B Medium Density Fiberboard (MDF): Composite panel composed of cellulosic fibers, additives, and bonding system; cured under heat and pressure; comply with ANSI A208.2.

#### **2.03 LAMINATE MATERIALS**

- A Manufacturers:
  1. Formica Corporation: [www.formica.com/#sle](http://www.formica.com/#sle).
  2. Wilsonart LLC: [www.wilsonart.com/#sle](http://www.wilsonart.com/#sle).
  3. Or Approved Equal.
- B High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- C Provide specific types as follows:
  1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color as selected, finish as selected.
  2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, finish as selected.
  3. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, color as selected, finish as selected.

#### **2.04 COUNTERTOPS**

- A Countertops: See Section 123600.

#### **2.05 ACCESSORIES**

- A Adhesive: Type recommended by fabricator to suit application.
- B Fasteners: Size and type to suit application.

## **2.06 HARDWARE**

- A Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
- C Drawer and Door Pulls: "U" shaped wire pull, aluminum with satin finish, 6 inch centers.
- D Drawer Slides:
  - 1. Type: Extension types as indicated.
  - 2. Static Load Capacity: Commercial grade.
  - 3. Mounting: Side mounted.
  - 4. Stops: Integral type.
- E Hinges: European style concealed self-closing type, steel with satin finish.

## **2.07 FABRICATION**

- A Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- E Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify adequacy of backing and support framing.
- B Verify location and sizes of utility rough-in associated with work of this section.

### **3.02 INSTALLATION**

- A Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C Use fixture attachments in concealed locations for wall mounted components.
- D Use concealed joint fasteners to align and secure adjoining cabinet units.
- E Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

### **3.03 ADJUSTING**

- A Adjust installed work.
- B Adjust moving or operating parts to function smoothly and correctly.

### **3.04 CLEANING**

- A Clean casework, counters, shelves, hardware, fittings, and fixtures.

**END OF SECTION**

## **SECTION 072100 THERMAL INSULATION**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Board insulation at cavity wall construction.
- B Batt insulation in exterior wall construction.

#### **1.02 REFERENCE STANDARDS**

- A ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2022.
- B ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.
- C ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

#### **1.03 SUBMITTALS**

- A Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- B Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

#### **1.04 FIELD CONDITIONS**

- A Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

### **PART 2 PRODUCTS**

#### **2.01 FOAM BOARD INSULATION MATERIALS**

- A Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
  - 1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
  - 2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  - 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  - 4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
  - 5. Board Edges: Square.
  - 6. Products:
    - a. Owens Corning Corporation; FOAMULAR Type IV Extruded Polystyrene (XPS) Insulation: [www.ocbuildingspec.com/#sle](http://www.ocbuildingspec.com/#sle).
    - b. Or Approved Equal.

#### **2.02 MINERAL FIBER BLANKET INSULATION MATERIALS**

- A Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.

1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 50 or less, when tested in accordance with ASTM E84.
3. Facing: Unfaced.
4. Products:
  - a. CertainTeed Corporation: [www.certainteed.com/#sle](http://www.certainteed.com/#sle).
  - b. Johns Manville: [www.jm.com/#sle](http://www.jm.com/#sle).
  - c. Owens Corning Corporation: [www.ocbuildingspec.com/#sle](http://www.ocbuildingspec.com/#sle).
  - d. Or Approved Equal.

### **2.03 ACCESSORIES**

- A Insulation Baffle Vent: Provide Owens Corning Raft-R-Mate Attic Rafter Vent or Approved Equal.
- B Adhesive: Type recommended by insulation manufacturer for application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

### **3.02 BOARD INSTALLATION AT CAVITY WALLS**

- A Apply adhesive to back of boards:
- B Install boards to fit snugly between wall ties.
- C Install boards horizontally on walls.
  1. Place boards to maximize adhesive contact.
  2. Install in running bond pattern.
  3. Butt edges and ends tightly to adjacent boards and protrusions.
- D Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

### **3.03 BATT INSTALLATION**

- A Install insulation in accordance with manufacturer's instructions.
- B Install in exterior wall and ceiling spaces without gaps or voids. Do not compress insulation.
- C Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

### **3.04 PROTECTION**

- A Do not permit installed insulation to be damaged prior to its concealment.

**END OF SECTION**

**SECTION 072700**  
**AIR BARRIERS - CARLISLE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Fire-resistant self-adhered membrane air barrier.

**1.02 REFERENCE STANDARDS**

- A ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2021.
- B ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- C ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a, with Editorial Revision (2023).
- D ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials 2021a.
- E NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components 2023.

**1.03 SUBMITTALS**

- A Product Data: Provide data for membrane, joint cover sheet, and joint and crack sealants.
- B Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.
- C Warranty:
  - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
  - 2. Submit installer's certification that installation complies with warranty conditions for the waterproofing membrane.

**1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

**1.05 FIELD CONDITIONS**

- A Maintain ambient temperatures above 40 degrees F for 24 hours before and during application.

**1.06 WARRANTY**

- A Manufacturer Warranty: Provide 5-year manufacturer warranty for air barrier failing to resist penetration of air. Complete forms in Owner's name and register with manufacturer.
  - 1. Exceptions are where such failures are the result of building structural failures; hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURER**

#### **A Air Barriers:**

1. Carlisle Coatings & Waterproofing: [www.carlisleccw.com/#sle](http://www.carlisleccw.com/#sle).
2. Or Approved Equal.

### **2.02 MATERIALS**

#### **A Fire-Resistant Self-Adhered Membrane Air Barrier: Polyester composite membrane with breathable engineered film fully coated on one side with permeable acrylic adhesive, and removable silicone-coated release film that is removed during installation.**

1. Product:
  - a. Carlisle Coatings & Waterproofing Inc; Fire Resist 705 VP (Vapor Permeable).
  - b. Or Approved Equal.
2. Thickness: 23 mil, 0.023 inch, nominal.
3. Width: 48 inches, nominal.
4. Suitable for installation over wood sheathing substrates.
5. Service Temperature: Range of 20 to 180 degrees F.
6. Water Vapor Permeance: 9.05 perm of membrane, measured in accordance with ASTM E96/E96M using Procedure A, Desiccant Method.
7. Air Permeance: 0.0002 cfm/sq ft maximum membrane leakage when tested at 1.57 psf pressure difference in accordance with ASTM E2178.
8. Comply with NFPA 285 wall assembly requirements.
9. Surface Burning: Flame spread index (FSI) of 10, and smoke developed index (SDI) of 5 or less, when tested in accordance with ASTM E84
10. Low Temperature Flexibility: No cracking at minus 20 degrees F with 180-degree bend over 1 inch mandrel, measured in accordance with test method ASTM D1970/D1970M.

### **2.03 ACCESSORIES**

- A Seaming Materials:** As recommended by membrane manufacturer.
- B Membrane Sealant:** As recommended by membrane manufacturer.
- C Adhesives:** As recommended by membrane manufacturer.
- D Thinner and Cleaner:** As recommended by adhesive manufacturer, compatible with sheet membrane.
- E Sealant for Cracks and Joints In Substrates:** Resilient elastomeric joint sealant compatible with substrates and waterproofing materials, as recommended by membrane manufacturer.
- F Backer Rods:** Closed-cell polyethylene foam rod, as recommended by membrane manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify existing conditions before starting work.**

- B Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of air barrier system.
- C Verify that substrate surfaces are smooth, free of honeycomb or pitting detrimental to full contact bond of air barrier materials.
- D Verify that items penetrating surfaces to receive air barrier are securely installed.
- E Where existing conditions are responsibility of another installer, notify Architect of unsatisfactory conditions.
- F Do not proceed with work until unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A Remove projections, protruding fasteners, and loose or foreign matter that may interfere with proper installation.
- B Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's installation instructions.

### **3.03 INSTALLATION**

- A Install materials in accordance with manufacturer's installation instructions.
- B Air Barriers: Install continuous airtight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.
- D Self-Adhered Sheets:
  - 1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
  - 2. Overlap sheets shingle fashion to shed water and seal laps airtight, 3 inches, minimum.
  - 3. Overlap sheets onto each side of transitions such as joints, angle changes, and substrate changes, 3 inches, minimum.
  - 4. Once sheets are in place, press firmly onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
  - 5. Use same material, or other material approved by sheet manufacturer, to seal to adjacent substrates, and as flashing.
  - 6. At wide joints, install extra flexible membrane to allow for joint movement.

**END OF SECTION**

**SECTION 074113**  
**METAL ROOF PANELS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Metal roof panel system of preformed aluminum panels.

**1.02 REFERENCE STANDARDS**

- A AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- B ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2021a.
- C ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing 2017 (Reapproved 2023).

**1.03 SUBMITTALS**

- A Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Storage and handling requirements and recommendations.
  - 2. Installation methods.
  - 3. Specimen warranty.
- B Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
  - 1. Show work to be field-fabricated or field-assembled.
- C Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.
- D Manufacturer's qualification statement.
- E Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

**1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing products specified in this section and with at least three years of documented experience.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A Provide strippable plastic protection on prefinished roofing panels for removal after installation.
- B Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

**1.06 FIELD CONDITIONS**

- A Do not install metal roof panels, underlayment when surface, ambient air, or wind chill temperatures are below 45 degrees F.

**1.07 WARRANTY**

- A Finish Warranty: Provide 10-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A Architectural Metal Roof Panel Manufacturers:
  - 1. ATAS International, Inc; Field-Lok FLL217: [www.atas.com/#sle](http://www.atas.com/#sle).
  - 2. Or Approved Equal.

### **2.02 METAL ROOF PANELS**

- A Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.
- B Metal Panels: Factory-formed panels with factory-applied finish.
  - 1. Aluminum Panels:
    - a. Alloy and Temper: Aluminum complying with ASTM B209/B209M; temper as required for forming.
    - b. Thickness: Minimum 20 gauge, 0.032 inch.
  - 2. Profile: Standing seam, with minimum 1-inch seam height; concealed fastener system for field seaming with special tool.
  - 3. Texture: Smooth.
  - 4. Length: Full length of roof slope, without lapped horizontal joints.
  - 5. Width: Maximum panel coverage of 21 3/4 inches.

### **2.03 ATTACHMENT SYSTEM**

- A Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

### **2.04 FABRICATION**

- A Panels: Provide factory fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.
- B Joints: Provide captive gaskets, sealants, or separator strips at panel joints to ensure weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

### **2.05 FINISHES**

- A Fluoropolymer Coil Coating System: Manufacturer's standard multi-coat metal coil coating system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected from manufacturer's standards.

### **2.06 ACCESSORIES**

- A Miscellaneous Sheet Metal Items: Provide flashings, trim, moldings, and closure strips of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
- B Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.

- C Sealants:
  - 1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
  - 2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
  - 3. Seam Sealant: Factory-applied, non-skinning, non-drying type.
- D Underlayment for Wood Substrate: ASTM D226/D226M roofing felt, perforated type; covered by water-resistant rosin-sized building paper.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Do not begin installation of preformed metal roof panels until substrates have been properly prepared.
- B If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A Broom clean wood sheathing prior to installation of roofing system.
- B Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to ensure that completed roof will be free of leaks.
- C Remove protective film from surface of roof panels immediately prior to installation; strip film carefully to avoid damage to prefinished surfaces.
- D Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by metal roof panel manufacturer.
- E At locations where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

### **3.03 INSTALLATION**

- A Overall: Install roofing system in accordance with approved shop drawings and metal roof panel manufacturer's instructions and recommendations, as applicable to specific project conditions; securely anchor components of roofing system in place allowing for thermal and structural movement.
  - 1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
  - 2. Minimize field cutting of panels. Where field cutting is required, use methods that will not distort panel profiles. Use of torches for field cutting is prohibited.
- B Accessories: Install necessary components that are required for complete roofing assembly, including flashings, trim, closure strips, caps, equipment curbs, rib closures, ridge closures, and similar roof accessory items.
- C Install roofing felt and building paper slip sheet on roof sheathing before installing preformed metal roof panels; secure by methods acceptable to roof panel manufacturer, minimizing use of metal fasteners; apply from eaves to ridge in shingle fashion, overlapping horizontal joints at least 2 inches and side and end laps at least 3 inches; offset seams in building paper and seams in roofing felt.

D Roof Panels: Install metal roof panels in accordance with manufacturer's installation instructions, minimizing transverse joints except at junction with penetrations.

1. Form weathertight standing seams incorporating concealed clips, using an automatic mechanical seaming device approved by panel manufacturer.

### **3.04 CLEANING**

A Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

### **3.05 PROTECTION**

- A Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.
- B Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

**END OF SECTION**

## **SECTION 074213 METAL WALL PANELS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Manufactured metal panels for exterior wall panels, with related flashings and accessory components.

#### **1.02 RELATED REQUIREMENTS**

- A Section 054000 - Cold-Formed Metal Framing: Wall panel substrate.
- B Section 072700 - Air Barriers: Air barrier under wall panels.

#### **1.03 REFERENCE STANDARDS**

- A AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- B ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2021a.

#### **1.04 SUBMITTALS**

- A Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
  - 1. Physical characteristics of components shown on shop drawings.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation instructions and recommendations.
- B Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
- C Samples: Submit two samples of wall panel, 12 inches by 12 inches in size illustrating finish color, sheen, and texture.
- D Manufacturer's qualification statement.

#### **1.05 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C Prevent contact with materials that may cause discoloration or staining of products.

#### **1.07 FIELD CONDITIONS**

- A Do not install wall panels when air temperature or relative humidity are outside manufacturer's limits.

#### **1.08 WARRANTY**

- A Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

**A Metal Wall Panels - Concealed Fasteners:**

1. ATAS International, Inc; Multi-Purpose Panels Grand V: [www.atas.com/#sle](http://www.atas.com/#sle).
2. Or Approved equal.

### **2.02 METAL WALL PANEL SYSTEM**

**A Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.**

1. Provide exterior wall panels.
2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
3. Maximum Allowable Deflection of Panel:  $L/180$  for length(L) of span.
4. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
5. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
6. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
7. Corners: Factory-fabricated in one continuous piece with minimum 2-inch returns.

**B Exterior Wall Panels: Composite panel consisting of polypropylene core between two finished aluminum sheets.**

1. Profile: Vertical.
2. Material: Precoated aluminum sheet, 20 gauge, 0.032 inch minimum thickness.
3. Panel Size: 32 inch coverage and 1/2 inch depth.
4. Concealed Fastener: Provide H Molding Extrusion at all panel joints with concealed fasteners.
5. Panel Adhesive: Provide manufacturer's panel adhesive per manufacturer's installation instructions.
6. Foam Tape: Provide manufacturer's foam tape between adhesive areas per manufacturer's installation instructions.
7. Color: As selected by Architect from manufacturer's full line.

**C Anchors: Galvanized steel.**

### **2.03 MATERIALS**

**A Precoated Aluminum Sheet: ASTM B209/B209M, 3105 alloy, O temper, with smooth surface texture; continuous-coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.**

### **2.04 FINISHES**

**A Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over epoxy primer.**

- B Fluoropolymer Coil Coating System: Manufacturer's standard multi-coat metal coil coating system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected from manufacturer's standards.

## **2.05 ACCESSORIES**

- A Fasteners: Manufacturer's standard type to suit application; steel, hot dip galvanized.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that building framing members are ready to receive panels.
- B Verify air barrier, see Section 072700, has been installed over wall panel substrate.

### **3.02 PREPARATION**

- A Protect surrounding areas and adjacent surfaces from damage during execution of this work.

### **3.03 INSTALLATION**

- A Install panels on walls in accordance with manufacturer's instructions.
- B Fasten panels to structural supports; aligned, level, and plumb.
- C Use concealed fasteners unless otherwise indicated by Architect.

### **3.04 TOLERANCES**

- A Offset From True Alignment Between Adjacent Members Abutting or In Line: 1/16 inch, maximum.
- B Variation from Plane or Location As Indicated on Drawings: 1/4 inch, maximum.

### **3.05 CLEANING**

- A Remove site cuttings from finish surfaces.
- B Remove protective material from wall panel surfaces.
- C Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

### **3.06 PROTECTION**

- A Protect metal wall panels until completion of project.
- B Touch-up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

**END OF SECTION**

## **SECTION 074633 PLASTIC SIDING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Plastic soffit and trim.

#### **1.02 REFERENCE STANDARDS**

- A ASTM D4477 - Standard Specification for Rigid (Unplasticized) Poly(Vinyl Chloride) (PVC) Soffit 2022.

#### **1.03 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.
  - 3. Installation methods.
- B Color Samples: Where colors are not specified, provide samples of manufacturer's entire color line for selection.

#### **1.04 QUALITY ASSURANCE**

- A Installer Qualifications: Not less than three years of experience with products specified.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A See Section 017419 - Construction Waste Management and Disposal for packaging waste requirements.
- B Store products in manufacturer's unopened packaging until ready for installation.
- C Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A General Requirements:
  - 1. Soffit: Complying with ASTM D4477.
- B Plastic Soffit Panels:
  - 1. Profile: Board Style, Triple 4-Inch; 4 inches wide, fully vented; 12 inch width, 4 inch exposure.
  - 2. Thickness: 0.038 inch, minimum.
  - 3. Length: 12 feet, minimum.
  - 4. Nailing Hem: Single layer, with 1-1/8 inch long nail holes at maximum 18 inches on center.
  - 5. Finish: Smooth.
  - 6. Color: As selected by Architect from manufacturer's full range of available colors.

#### **2.02 ACCESSORIES**

- A Accessories: Provide coordinating accessories made of same material as required for complete and proper installation even when not specifically indicated on drawings.
  - 1. Color: Match adjacent siding or soffit panels.
  - 2. Length:

- a. Other Trim: 12.5 feet, minimum.
- 3. J-Channel Trim: 3/8 inch.
- B Fasteners: Aluminum nails, alloy 5056 or 6110, with minimum tensile strength of 63,000 psi; length as required to penetrate framing at least 3/4 inch.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Examine substrate conditions before beginning installation; verify dimensions and acceptability of substrate.
- B Do not proceed with installation until unacceptable conditions have been corrected.
- C If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

### **3.03 INSTALLATION**

- A Install siding, soffit, and trim in accordance with manufacturer's printed installation instructions.
- B Attach securely to framing, not sheathing, with horizontal components true to level and vertical components true to plumb, providing a weather resistant installation.
- C Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings, and provide vent area specified.
- D Clean dirt from surface of installed products, using mild soap and water.

### **3.04 CLEANING**

- A Clean exposed work upon completion of installation; remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to finish.

### **3.05 PROTECTION**

- A Protect installed products until completion of project.
- B Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

**SECTION 076200**  
**SHEET METAL FLASHING AND TRIM**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Fabricated sheet metal items, including flashings, counterflashings, gutters, and downspouts.

**1.02 RELATED REQUIREMENTS**

- A Section 077123 - Manufactured Gutters and Downspouts.

**1.03 REFERENCE STANDARDS**

- A AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- B ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2021a.
- C CDA A4050 - Copper in Architecture - Handbook current edition.
- D SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

**1.04 SUBMITTALS**

- A Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- B Samples: Submit two samples, 2 by 2 inches in size, illustrating metal finish color.

**1.05 QUALITY ASSURANCE**

- A Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B Prevent contact with materials that could cause discoloration or staining.

**PART 2 PRODUCTS**

**2.01 SHEET MATERIALS**

- A Pre-Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 20 gauge, 0.032 inch thick; plain finish shop pre-coated with PVDF coating.
  - 1. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; pretreated metal with two-coat system including primer and color coat with at least 70 percent PVDF coating.
  - 2. Color: As selected by Architect from manufacturer's full colors.

**2.02 FABRICATION**

- A Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B Form pieces in longest possible lengths.
- C Hem exposed edges on underside 1/2 inch; miter and seam corners.
- D Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

- E Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.
- F Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

### **2.03 GUTTERS AND DOWNSPOUTS**

- A See Section 077123 for manufactured gutters and downspouts.

### **2.04 ACCESSORIES**

- A Fasteners: Galvanized steel, with soft neoprene washers.
- B Primer Type: Zinc chromate.
- C Concealed Sealants: Non-curing butyl sealant.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A Install starter and edge strips, and cleats before starting installation.
- B Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

### **3.02 INSTALLATION**

- A Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B Apply plastic cement compound between metal flashings and felt flashings.
- C Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

**END OF SECTION**

**SECTION 077123**  
**MANUFACTURED GUTTERS AND DOWNSPOUTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Pre-finished aluminum gutters and downspouts.

**1.02 REFERENCE STANDARDS**

- A AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- B ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2021a.

**1.03 SUBMITTALS**

- A Product Data: Provide data on prefabricated components.
- B Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
- C Samples: Submit manufacturer's full range of colors for selection by Architect during submittal approval.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- B Prevent contact with materials that could cause discoloration, staining, or damage.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A Pre-Finished Aluminum Sheet: ASTM B209/B209M; 0.032 inch thick.
  - 1. Finish: Plain, shop pre-coated with polyvinylidene fluoride (PVDF) coating.
  - 2. Color: As selected from manufacturer's standard colors.

**2.02 COMPONENTS**

- A Gutters: CDA rectangular style profile.
- B Downspouts: CDA rectangular profile.
- C Anchors and Supports: Profiled to suit gutters and downspouts.
  - 1. Anchoring Devices: In accordance with CDA requirements.
  - 2. Gutter Supports: Brackets.
  - 3. Downspout Supports: Brackets.
- D Fasteners: Galvanized steel, with soft neoprene washers.

**2.03 FABRICATION**

- A Form gutters and downspouts of profiles and size indicated.
- B Fabricate with required connection pieces.
- C Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D Hem exposed edges of metal.
- E Fabricate gutter and downspout accessories; seal watertight.

## **2.04 FINISHES**

- A Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604, multiple coat, thermally cured fluoropolymer finish system; color as indicated.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify existing conditions before starting work.
- B Verify that surfaces are ready to receive work.

### **3.02 INSTALLATION**

- A Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.
- C Slope gutters 1/4 inch per foot .

**END OF SECTION**

**SECTION 077200**  
**ROOF ACCESSORIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Ridge vents.
- B Snow guards.

**1.02 SUBMITTALS**

- A Product Data: Manufacturer's data sheets on each product to be used.
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
  - 4. Maintenance requirements.

**1.03 DELIVERY, STORAGE, AND HANDLING**

- A Store products in manufacturer's unopened packaging until ready for installation.
- B Store products under cover and elevated above grade.

**PART 2 PRODUCTS**

**2.01 ROOF HATCHES AND VENTS**

- A Ridge Vents: Factory fabricated, formed panels with integral attachment flanges and snap-on cover.
  - 1. Vent Material: 0.040-inch thick aluminum.
  - 2. Perforated Screen: 0.050-inch thick aluminum.
  - 3. Brackets: Manufacturer's standard 20 gauge, 0.0359 inch.
  - 4. Finish Color: To be selected by Architect from manufacturer's standard range.
  - 5. Products:
    - a. Atlas Roofing Corporation; Techni-Flo RV Engineered Ridge Vent:  
[www.atlasroofing.com/#sle](http://www.atlasroofing.com/#sle).
    - b. Or Approved Equal.

**2.02 SNOW GUARDS**

- A Fence Type Snow Guard: Continuous snow guard; manufacturer's standard single pipe, bar, channel, or solid rod, set in brackets or posts, with optional plates and metal trim to match roof.
  - 1. Extruded Aluminum Channel: Manufacturer's standard shape; with slot for insertion of metal trim matching roof.
  - 2. Clamps for Standing Seam Roof: Aluminum clamps attached to standing seams of roof panels; for attachment of fence type snow guard.
    - a. Seam Profile: Selected by Architect from manufacturer's standard range; match profile of metal roof.
    - b. Finish: Mill finish.
  - 3. Products:
    - a. Atas International, Inc; S5! Colorgard system.
    - b. Or Approved Equal.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Do not begin installation until substrates have been properly prepared.
- B If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A Clean surfaces thoroughly prior to installation.
- B Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

### **3.03 INSTALLATION**

- A Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

### **3.04 PROTECTION**

- A Protect installed products until completion of project.
- B Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

## **SECTION 079200 JOINT SEALANTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Nonsag gunnable joint sealants.
- B Self-leveling pourable joint sealants.
- C Joint backings and accessories.

#### **1.02 REFERENCE STANDARDS**

- A ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer 2015 (Reapproved 2022).
- B ASTM C834 - Standard Specification for Latex Sealants 2017.
- C ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- D ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.
- E ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2022.
- F ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants 2018.
- G SCAQMD 1168 - Adhesive and Sealant Applications 1989, with Amendment (2022).

#### **1.03 SUBMITTALS**

- A Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
  - 5. Substrates for which use of primer is required.
  - 6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
  - 7. Sample product warranty.
  - 8. Certification by manufacturer indicating that product complies with specification requirements.
- B Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- C Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- D Executed warranty.

#### **1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

- B Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

## **1.05 WARRANTY**

- A Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

## **PART 2 PRODUCTS**

### **2.01 JOINT SEALANT APPLICATIONS**

- A Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to:
    - a. Wall expansion and control joints.
    - b. Joints between door, window, and other frames and adjacent construction.
    - c. Joints between different exposed materials.
  2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
    - a. Joints between door, window, and other frames and adjacent construction.
  3. Do not seal the following types of joints:
    - a. Intentional weep holes in masonry.
    - b. Joints indicated to be treated with manufactured expansion joint cover, or some other type of sealing device.
    - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
    - d. Joints where installation of sealant is specified in another section.
- B Exterior Joints: Use nonsag nonstaining silicone sealant, unless otherwise indicated.
- C Interior Joints: Use nonsag acrylic emulsion latex sealant, unless otherwise indicated.

### **2.02 JOINT SEALANTS - GENERAL**

- A Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

### **2.03 NONSAG JOINT SEALANTS**

- A Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
  2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
  3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
  4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
  5. Color: To be selected by Architect from manufacturer's full range.
  6. Cure Type: Single-component, neutral moisture curing.

7. Service Temperature Range: Minus 20 to 180 degrees F.
8. Products:
  - a. Pecora Corporation: [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - b. Sika Corporation: [www.usa.sika.com/#sle](http://www.usa.sika.com/#sle).
  - c. Tremco Commercial Sealants & Waterproofing:  
[www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
  - d. Or Approved Equal.
- B Acrylic Emulsion Latex: Water-based; ASTM C834, single component, nonstaining, nonbleeding, nonsagging; not intended for exterior use.
  1. Color: To be selected by Architect from manufacturer's full range.
  2. Grade: ASTM C834; Grade 0 Degrees F (Minus 18 Degrees C).
  3. Products:
    - a. Pecora Corporation: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - b. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - c. Tremco Commercial Sealants & Waterproofing:  
[www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - d. Or Approved Equal.

#### **2.04 SELF-LEVELING JOINT SEALANTS**

- A Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
  1. Movement Capability: Plus and minus 50 percent, minimum.
  2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's full range.
  4. Service Temperature Range: Minus 40 to 180 degrees F.
  5. Products:
    - a. Pecora Corporation: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - b. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - c. Sika Corporation: [www.usa.sika.com/#sle](http://www.usa.sika.com/#sle).
    - d. Or Approved Equal.

#### **2.05 ACCESSORIES**

- A Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
  1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
  2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
  3. Open Cell: 40 to 50 percent larger in diameter than joint width.
  4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

- C Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that joints are ready to receive work.
- B Verify that backing materials are compatible with sealants.
- C Verify that backer rods are of the correct size.

### **3.02 PREPARATION**

- A Remove loose materials and foreign matter that could impair adhesion of sealant.
- B Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

### **3.03 INSTALLATION**

- A Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B Provide joint sealant installations complying with ASTM C1193.
- C Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
  - 1. Width/depth ratio of 2:1.
  - 2. Neck dimension no greater than 1/3 of the joint width.
  - 3. Surface bond area on each side not less than 75 percent of joint width.
- D Install bond breaker backing tape where backer rod cannot be used.
- E Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

**END OF SECTION**

**SECTION 081113**  
**HOLLOW METAL DOORS AND FRAMES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Non-fire-rated hollow metal doors and frames.
- B Hollow metal borrowed lites glazing frames.
- C Accessories, including glazing.

**1.02 RELATED REQUIREMENTS**

- A Section 087100 - Door Hardware.
- B Section 088000 - Glazing: Glass for doors and borrowed lites.

**1.03 REFERENCE STANDARDS**

- A ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors 2022.
- C ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.
- D ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2020.
- E ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- F ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2021a.
- G ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.
- H BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames 2016.
- I ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.
- J NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames 2002.
- K NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.
- L NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2017.
- M NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2014.
- N SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames 2023.

**1.04 SUBMITTALS**

- A Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.
- B Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

- C Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- D Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

### **1.05 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A Hollow Metal Doors and Frames:
  - 1. Ceco Door, an Assa Abloy Group company: [www.assaabloydss.com/#sle](http://www.assaabloydss.com/#sle).
  - 2. Republic Doors, an Allegion brand: [www.republicdoor.com/#sle](http://www.republicdoor.com/#sle).
  - 3. Steelcraft, an Allegion brand: [www.allegion.com/#sle](http://www.allegion.com/#sle).
  - 4. Or Approved Equal.

### **2.02 PERFORMANCE REQUIREMENTS**

- A Requirements for Hollow Metal Doors and Frames:
  - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
  - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
  - 3. Door Edge Profile: Manufacturers standard for application indicated.
  - 4. Typical Door Face Sheets: Flush.
  - 5. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

### **2.03 HOLLOW METAL DOORS**

- A Interior Doors, Non-Fire-Rated:
  - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 1 - Standard-duty.

- b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
- c. Model 1 - Full Flush.
- d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
- 2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
- 3. Door Thickness: 1-3/4 inches, nominal.
- 4. Door Finish: Factory primed and field finished.

## **2.04 HOLLOW METAL FRAMES**

- A Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B Frame Finish: Factory primed and field finished.
- C Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
- D Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

## **2.05 FINISHES**

- A Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

## **2.06 ACCESSORIES**

- A Door Window Frames: Door window frames with glazing securely fastened within door opening.
  - 1. Size: As indicated on drawings.
  - 2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel, with finish to match door.
  - 3. Glazing: 1/4 inch thick, tempered glass, in compliance with requirements of authorities having jurisdiction.
- B Glazing: As specified in Section 088000, factory installed.
- C Removable Stops: Formed sheet steel, mitered or butted corners; prepared for countersink style tamper proof screws.
- D Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- E Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify existing conditions before starting work.
- B Verify that opening sizes and tolerances are acceptable.
- C Verify that finished walls are in plane to ensure proper door alignment.

### **3.02 PREPARATION**

- A Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

### **3.03 INSTALLATION**

- A Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B Coordinate frame anchor placement with wall construction.
- C Install door hardware as specified in Section 087100.
- D Comply with glazing installation requirements of Section 088000.
- E Touch up damaged factory finishes.

### **3.04 TOLERANCES**

- A Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

### **3.05 ADJUSTING**

- A Adjust for smooth and balanced door movement.

**END OF SECTION**

**SECTION 081116**  
**ALUMINUM DOORS AND FRAMES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Flush aluminum doors with aluminum face sheets.
- B Aluminum frames.
- C Flush door panels.

**1.02 RELATED REQUIREMENTS**

- A Section 087100 - Door Hardware: Hardware for aluminum doors.

**1.03 REFERENCE STANDARDS**

- A AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document) 2015.
- B AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- C ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- D ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- E ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2021a.
- F ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.
- G ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2021.
- H ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus 2019.
- I ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2019.
- J ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference 2000 (Reapproved 2023).
- K ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights 2019c.
- L ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

**1.04 SUBMITTALS**

- A Product Data: Manufacturer's descriptive literature for each type of door; include information on fabrication methods.
- B Shop Drawings: Include elevations of each opening type.
  - 1. Verify dimensions by field measurements before fabrication and indicate on shop drawings.

- C Selection Samples: Complete set of color and finish options, using actual materials, for Architect's selection.
- D Test Report: Certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.
- E Manufacturer's qualification statement.

#### **1.05 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than five years of documented experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A Deliver aluminum components in manufacturer's standard protective packaging, palletted, crated, or banded together.
- B Inspect delivered components for damage and replace. Repaired components will not be accepted.
- C Store components in clean, dry, indoor area, under cover in manufacturer's packaging until installation.
- D Protect materials and finish from damage during handling and installation.

#### **1.07 WARRANTY**

- A Correct defective Work within a five year period after Date of Substantial Completion.
- B Manufacturer Warranty: Provide 10-year manufacturer warranty for defects in workmanship and materials. Complete forms in Owner's name and register with manufacturer.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A Flush Aluminum Doors with Aluminum Face Sheets:
  1. Basis of Design: Kawneer Company, Inc.
  2. Other acceptable manufacturers:
    - a. United States Aluminum Corp.
    - b. Vistawall Architectural Products.
    - c. Or Approved Equal.
- B Aluminum Frames: Same as door manufacturer.

#### **2.02 DOORS AND FRAMES**

- A Accessibility: Comply with ICC A117.1 and ADA Standards.
- B Flush Aluminum Doors with Aluminum Face Sheets: Aluminum internal framing and faces; no steel components.
  1. Thickness: 1-3/4 inches, nominal.
  2. Facing: Seamless aluminum sheet, 0.062 inch, smooth texture, laminated to foam panel core.
  3. Finish: High performance organic coating.
  4. Texture: Smooth.
  5. Weatherstripping: Replaceable pile type; at jambs and head of exterior doors.
- C Aluminum Frames for Doors, Sidelights, or Transoms: Extruded aluminum, thermally broken hollow or C-shaped sections; no steel components.

1. Frame Depth: 4-1/4 inches.
  2. Finish: Same as doors.
  3. Weatherstripping: Replaceable pile type; at jambs and head.
- D Dimensions and Shapes: As indicated on drawings; dimensions indicated are nominal.
1. Provide the following clearances:
    - a. Hinge and Lock Stiles: 1/8 inch.
    - b. Between Meeting Stiles: 1/4 inch.
    - c. At Top Rail and Bottom Rail: 1/8 inch.

### **2.03 COMPONENTS**

- A Flush Door Panels: Without visible seams on face sheet.
1. Framing and Hardware Backup: Extruded aluminum tubing, 1/8 inch minimum thickness.
  2. Perimeter Edges: Extruded aluminum cap.
  3. Insulating Panel Thickness: 1 inch overall thickness.
  4. Exterior Doors Thermal Transmittance: U-value of 0.50, nominal, when tested in accordance with ASTM C1363.
  5. Core: Rigid insulating material of not less than 2.0 lb/cu ft density.
  6. Laminating Adhesive: Manufacturer's standard low-VOC materials.
- B Frames: Extruded aluminum shapes, not less than 0.062 inch thick, reinforced at hinge and strike locations.
1. Corner Brackets: Extruded aluminum, fastened with stainless steel screws.
  2. Trim: Extruded aluminum, not less than 0.062 inch thick, removable snap-in type without exposed fasteners.

### **2.04 PERFORMANCE REQUIREMENTS**

- A Provide door assemblies that have been designed and fabricated in compliance with specified performance requirements.
- B Water Leakage: No uncontrolled leakage on interior face when tested in accordance with ASTM E331 at differential pressure of 7.5 psf.
- C Air Leakage: Maximum of 0.1 cu ft/min/sq ft at 6.27 psf differential pressure, when tested in accordance with ASTM E283/E283M.

### **2.05 MATERIALS**

- A Aluminum Sheet: ASTM B209/B209M, alloy 5005, temper H14, stretcher leveled.
- B Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063, temper T5, or alloy 6463, temper T5.

### **2.06 FINISHES**

- A High Performance Organic Coatings: Multiple coats, thermally cured fluoropolymer system with minimum dry film thickness (DFT) of 1.2 mils, 0.0012 inch over aluminum extrusions and panels; AAMA 2604.
- B Color: As selected by Architect from manufacturer's standard line.
- C Touch-Up Materials: As recommended by coating manufacturer for field application.

## **2.07 ACCESSORIES**

- A Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.
- B Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, non-magnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A123/A123M.
- C Bituminous Coating: Cold-applied asphaltic mastic, compounded for 30-mil thickness per coat.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.

### **3.02 PREPARATION**

- A Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions.
- B Replace components with damage to exposed finishes.
- C Separate dissimilar metals to prevent electrolytic action between metals.

### **3.03 INSTALLATION**

- A Install doors and frames in accordance with manufacturer's instructions and approved shop drawings.
- B Install exterior doors and frames in accordance with ASTM E2112.
- C Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations and within specified tolerances.
- D Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.
- E Hang doors and adjust hardware to achieve specified clearances and proper door operation.
- F Install door hardware. See Section 087100.

### **3.04 CLEANING**

- A Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609 & 610.
- B Do not use abrasive, caustic, or acid cleaning agents.

### **3.05 PROTECTION**

- A Protect products of this section from damage caused by subsequent construction until Date of Substantial Completion.
- B Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

**END OF SECTION**

**SECTION 081416**  
**FLUSH WOOD DOORS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Flush wood doors; flush configuration; non-rated.

**1.02 RELATED REQUIREMENTS**

- A Section 087100 - Door Hardware.
- B Section 099123 - Interior Painting: Field finishing of doors.

**1.03 REFERENCE STANDARDS**

- A AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- B AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

**1.04 SUBMITTALS**

- A Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- B Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A Package, deliver and store doors in accordance with specified quality standard.
- B Accept doors on site in manufacturer's packaging, and inspect for damage.
- C Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A Wood Veneer Faced Doors:
  - 1. Masonite Architectural: [www.architectural.masonite.com/#sle](http://www.architectural.masonite.com/#sle).
  - 2. VT Industries, Inc: [www.vtindustries.com/#sle](http://www.vtindustries.com/#sle).
  - 3. Or Approved Equal.

**2.02 DOORS**

- A Doors: See drawings for locations and additional requirements.
  - 1. Quality Standard: Custom Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
  - 1. Provide solid core doors at each location.

**2.03 DOOR AND PANEL CORES**

- A Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

## **2.04 DOOR FACINGS**

- A Veneer Facing for Opaque Finish: Medium density overlay (MDO), in compliance with indicated quality standard.

## **2.05 DOOR CONSTRUCTION**

- A Fabricate doors in accordance with door quality standard specified.
- B Cores Constructed with stiles and rails:
- C Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- D Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
  - 1. Exception: Doors to be field finished.
- E Provide edge clearances in accordance with the quality standard specified.

## **2.06 ACCESSORIES**

- A Door Hardware: See Section 087100.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A Verify existing conditions before starting work.
- B Verify that opening sizes and tolerances are acceptable.
- C Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

## **3.02 INSTALLATION**

- A Install doors in accordance with manufacturer's instructions and specified quality standard.
- B Field-Finished Doors: Trimming to fit is acceptable.
  - 1. Adjust width of non-rated doors by cutting equally on both jamb edges.
  - 2. Trim maximum of 3/4 inch off bottom edges.
- C Use machine tools to cut or drill for hardware.
- D Coordinate installation of doors with installation of frames and hardware.

## **3.03 TOLERANCES**

- A Comply with specified quality standard for fit and clearance tolerances.
- B Comply with specified quality standard for telegraphing, warp, and squareness.

## **3.04 ADJUSTING**

- A Adjust doors for smooth and balanced door movement.

**END OF SECTION**

## **SECTION 083613 SECTIONAL DOORS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Overhead sectional doors, manually operated.
- B Operating hardware and supports.

#### **1.02 REFERENCE STANDARDS**

- A ANSI A135.4 - Basic Hardboard 2012 (Reaffirmed 2020).
- B ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- C ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2004 (Reapproved 2012).
- D ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference 2014 (Reapproved 2021).
- E DASMA 102 - American National Standard Specifications for Sectional Doors 2018.

#### **1.03 SUBMITTALS**

- A Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- B Product Data: Show component construction, anchorage method, and hardware.
- C Manufacturer's Installation Instructions: Include any special procedures required by project conditions.
- D Operation Data: Include normal operation, troubleshooting, and adjusting.
- E Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.
- F Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### **1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

#### **1.05 WARRANTY**

- A Correct defective Work within a five year period after Date of Substantial Completion.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A Sectional Doors:
  - 1. Basis of Design: Overhead Door, Model 420 non-insulated and Model 422 insulated.
  - 2. Clopay Building Products: [www.clopaydoor.com/#sle](http://www.clopaydoor.com/#sle).
  - 3. Raynor Garage Doors: [www.raynor.com/#sle](http://www.raynor.com/#sle).
  - 4. Wayne-Dalton, a Division of Overhead Door Corporation: [www.wayne-dalton.com/#sle](http://www.wayne-dalton.com/#sle).

## **2.02 STEEL DOORS**

- A Steel Doors: Flush steel; non-insulated and insulated as indicated on drawings; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
  - 1. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.
  - 2. Door Nominal Thickness: 2 inches thick.
  - 3. Thermal Transmittance: U-factor of 0.31 Btu/hr sq ft degrees F, maximum, in accordance with DASMA 102.
  - 4. Air Leakage Rate: Less than 0.40 cfm/sf when tested in accordance with ASTM E283 at test pressure difference of 1.57 psf.
  - 5. Exterior Finish: Factory finished with acrylic baked enamel; color as selected by Architect.
  - 6. Interior Finish: Factory finished with acrylic baked enamel; color as selected from manufacturers standard line.
  - 7. Glazed Lights: Full panel width, one row; set in place with resilient glazing channel.
  - 8. Manual Operation: Chain hoist.
- B Door Panels: Steel construction; outer steel sheet of 20 gauge, 0.0359 inch minimum thickness, flush profile; inner steel sheet of 20 gauge, 0.0359 inch minimum thickness, flat profile; core reinforcement sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; polyurethane insulation.
- C Window Frame: Manufacturers standard, finish to match.
- D Glazing: Acrylic; single pane; clear; 1/8 inch overall thickness.

## **2.03 COMPONENTS**

- A Track: Rolled galvanized steel, 0.090 inch minimum thickness; 2 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.
- B Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
- C Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
  - 1. For Manual Operation: Requiring maximum exertion of 25 lbs force to open.
- D Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.
- E Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.
- F Head Weatherstripping: EPDM rubber seal, one piece full length.
- G Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

- H Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

## **2.04 MATERIALS**

- A Hardboard: ANSI A135.4, Class 1 - Tempered, S2S (smooth two sides) hardboard, 1/4 inch thick.
- B Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.
- C Insulation: Foamed-in-place polyurethane, bonded to facing.
  - 1. R-value of 7.35 minimum.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

### **3.02 PREPARATION**

- A Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.

### **3.03 INSTALLATION**

- A Install door unit assembly in accordance with manufacturer's instructions.
- B Anchor assembly to wall construction and building framing without distortion or stress.
- C Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- D Fit and align door assembly including hardware.
- E Install perimeter trim.

### **3.04 TOLERANCES**

- A Maximum Variation from Plumb: 1/16 inch.
- B Maximum Variation from Level: 1/16 inch.
- C Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.
- D Maintain dimensional tolerances and alignment with adjacent work.

### **3.05 ADJUSTING**

- A Adjust door assembly for smooth operation and full contact with weatherstripping.

### **3.06 CLEANING**

- A Clean doors and frames.
- B Remove temporary labels and visible markings.

### **3.07 PROTECTION**

- A Protect installed products from damage until Date of Substantial Completion.
- B Do not permit construction traffic through overhead door openings after adjustment and cleaning.

**END OF SECTION**

## **SECTION 087100 DOOR HARDWARE**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Hardware for wood, aluminum, and hollow metal doors.
- B Thresholds.
- C Weatherstripping and gasketing.

#### **1.02 REFERENCE STANDARDS**

- A ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B BHMA (CPD) - Certified Products Directory Current Edition.
- C BHMA A156.1 - Standard for Butts and Hinges 2021.
- D BHMA A156.2 - Bored and Preassembled Locks and Latches 2022.
- E BHMA A156.4 - Door Controls - Closers 2019.
- F BHMA A156.5 - Cylinders and Input Devices for Locks 2020.
- G BHMA A156.7 - Template Hinge Dimensions 2016.
- H BHMA A156.14 - Sliding and Folding Door Hardware 2019.
- I BHMA A156.16 - Auxiliary Hardware 2018.
- J BHMA A156.21 - Thresholds 2019.
- K BHMA A156.22 - Standard for Gasketing 2021.
- L BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems 2018.
- M BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames 2016.
- N DHI (H&S) - Sequence and Format for the Hardware Schedule 2019.
- O DHI (KSN) - Keying Systems and Nomenclature 2019.
- P DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames 2004.
- Q ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.
- R NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

#### **1.03 ADMINISTRATIVE REQUIREMENTS**

- A Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

#### **1.04 SUBMITTALS**

- A Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- B Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.

1. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
  2. List groups and suffixes in proper sequence.
  3. Provide complete description for each door listed.
  4. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
- C Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- D Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
1. Submit manufacturer's parts lists and templates.
- E Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
1. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

#### **1.05 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

#### **1.07 WARRANTY**

- A Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
1. Closers: Five years, minimum.
  2. Locksets and Cylinders: Three years, minimum.
  3. Other Hardware: Two years, minimum.

### **PART 2 PRODUCTS**

#### **2.01 DESIGN AND PERFORMANCE CRITERIA**

- A Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B Provide individual items of single type, of same model, and by same manufacturer.
- C Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
  2. Accessibility: ADA Standards and ICC A117.1.
  3. Applicable provisions of NFPA 101.
  4. Listed and certified compliant with specified standards by BHMA (CPD).
  5. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
- D Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule.

E Fasteners:

1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
  - a. Aluminum fasteners are not permitted.
  - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
  - a. Self-drilling (Tek) type screws are not permitted.
3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.

## **2.02 HINGES**

A Manufacturers:

1. Basis of Design: Stanley, dormakaba Group.
2. McKinney; an Assa Abloy Group company: [www.assaabloydss.com/#sle](http://www.assaabloydss.com/#sle).
3. Hager Companies: [www.hagerco.com/#sle](http://www.hagerco.com/#sle).
4. Or Approved Equal.

B Hinges: Comply with BHMA A156.1, Grade 1.

1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
  - a. Provide hinge width required to clear surrounding trim.
2. Provide hinges on every swinging door.
3. Provide following quantity of butt hinges for each door:
  - a. Doors From 60 inches High up to 90 inches High: Three hinges.

## **2.03 TRACK AND HANGERS**

A Manufacturers:

1. Basis of Design: Johnson Hardware.
2. Knappe & Vogt: [www.kv.com/#sle](http://www.kv.com/#sle).
3. Or Approved Equal.

B Sliding and Bifolding Door Hardware: Comply with BHMA A156.14.

1. Provide track, hanger fasteners, guides, and pulls; size track and hangers in accordance with manufacturer's recommendations for weight of doors.
2. Provide one pull for each pair of panels hinged together.
3. Provide flush cup pull on each sliding panel.

## **2.04 LOCK CYLINDERS**

A Manufacturers:

1. Basis of Design: Sargent.

B Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.

1. Provide full size interchangeable core (FSIC) type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
2. Provide cylinders from same manufacturer as locking device.

3. Provide cams and/or tailpieces as required for locking devices.

## **2.05 CYLINDRICAL LOCKS**

### **A Manufacturers:**

1. Basis of Design: Sargent.
2. Best, dormakaba Group: [www.bestaccess.com/#sle](http://www.bestaccess.com/#sle).
3. Schlage, an Allegion brand: [www.allegion.com/us/#sle](http://www.allegion.com/us/#sle).
4. Or Approved Equal.

### **B Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.**

1. Bored Hole: 2-1/8 inch diameter.
2. Latchbolt Throw: 1/2 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
  - a. Finish: To match lock or latch.

## **2.06 CLOSERS**

### **A Manufacturers; Surface Mounted:**

1. Basis of Design: Sargent.
2. Hager Companies: [www.hagerco.com/#sle](http://www.hagerco.com/#sle).
3. LCN, an Allegion brand: [www.allegion.com/us/#sle](http://www.allegion.com/us/#sle).
4. Or Approved Equal.

### **B Closers: Comply with BHMA A156.4, Grade 1.**

1. Type: Surface mounted to door.
2. Provide door closer on each exterior door.
3. At outswinging exterior doors, mount closer on interior side of door.

## **2.07 FLOOR STOPS**

### **A Manufacturers:**

1. Basis of Design: Ives.
2. Rockwood; an Assa Abloy Group company: [www.assaabloydss.com/#sle](http://www.assaabloydss.com/#sle).
3. Hager Companies: [www.hagerco.com/#sle](http://www.hagerco.com/#sle).
4. Or Approved Equal.

### **B Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.**

1. Provide floor stops when wall surface is not available; be cautious not to create a tripping hazard.
2. Type: Manual hold-open, with bumper floor stop.
3. Material: Aluminum housing with rubber insert.

## **2.08 THRESHOLDS**

### **A Manufacturers:**

1. Basis of Design: Pemko.
2. Hager Companies: [www.hagerco.com/#sle](http://www.hagerco.com/#sle).
3. Zero International, Inc: [www.zerointernational.com/#sle](http://www.zerointernational.com/#sle).

4. Or Approved Equal.
- B Thresholds: Comply with BHMA A156.21.
  1. Provide threshold at each exterior door, unless otherwise indicated.
  2. Type: Ramped, accessible with maximum 1:12 slope.
  3. Material: Aluminum.
  4. Threshold Surface: Thermally broken.
  5. Field cut threshold to profile of frame and width of door sill for tight fit.
  6. Provide non-corroding fasteners at exterior locations.

## **2.09 WEATHERSTRIPPING AND GASKETING**

- A Manufacturers:
  1. Basis of Design: Kawneer Sealair System.
  2. Pemko; an Assa Abloy Group company: [www.assaabloydss.com/#sle](http://www.assaabloydss.com/#sle).
  3. National Guard Products, Inc: [www.ngpinc.com/#sle](http://www.ngpinc.com/#sle).
  4. Or Approved Equal.
- B Weatherstripping and Gasketing: Comply with BHMA A156.22.
  1. Head and Jamb Type: Adjustable.
  2. Material: Aluminum, with brush weatherstripping.
  3. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.

## **2.10 KEY CONTROL SYSTEMS**

- A Manufacturers:
  1. Basis of Design: Sargent.
- B Key Control Systems: Comply with guidelines of BHMA A156.28.
  1. Provide keying information in compliance with DHI (KSN) standards.
  2. Keying: Grand master keyed.
  3. Include construction keying and control keying with removable core cylinders.
  4. Key to existing keying system.
    - a. Owner to provide additional information on keying system and number of keys required during submittal approval.

## **2.11 FINISHES**

- A Finishes: Identified in schedule at end of section.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

## **3.02 INSTALLATION**

- A Install hardware in accordance with manufacturer's instructions and applicable codes.
- B Use templates provided by hardware item manufacturer.
- C Do not install surface mounted items until application of finishes to substrate are fully completed.
- D Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item.

1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
  2. Mounting heights in compliance with ADA Standards:
    - a. Locksets: 40-5/16 inch.
- E Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

### **3.03 ADJUSTING**

- A Adjust hardware for smooth operation.
- B Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

### **3.04 CLEANING**

- A Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B Clean adjacent surfaces soiled by hardware installation.
- C Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

### **3.05 PROTECTION**

- A Do not permit adjacent work to damage hardware or finish.

### **3.06 SCHEDULE**

- A Hardware Set #1
  1. 1 1/2 Pair Hinges: Stanley FBB199 4 1/2" x 4" x US26D
  2. 1 Lockset: Sargent 7G05 x LL x US26D
  3. 1 Closer: Sargent 351 Series x US26D
  4. 1 Threshold: Pemko 2005AT
  5. 1 Weatherseal (head and jambs): Kawneer Sealair System
- B Hardware Set #2
  1. 1 1/2 Pair Hinges: Stanley FBB199 4 1/2" x 4" x US26D
  2. 1 Latchset: Sargent 7G15 x LL x US26D
  3. 1 Closer: Sargent 351 Series x US26D
- C Hardware Set #3
  1. 1 1/2 Pair Hinges: Stanley FBB199 4 1/2" x 4" x US26D
  2. 1 Lockset: Sargent 7G05 x LL x US26D
  3. 1 Floor Stop: Ives FS Series x US26D
- D Hardware Set #4
  1. Sliding Door: Johnson 10SD hardware set
- E Hardware Set #5
  1. 1 1/2 Pair Hinges: Stanley FBB199 4 1/2" x 4" x US26D
  2. 1 Lockset: Sargent 7G65 x LLx US26D
  3. 1 Closer: Sargent 351 Series x US26D

**END OF SECTION**

## **SECTION 088000 GLAZING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Glass for Doors and windows.
- B Glazing units.
- C Glazing compounds.

#### **1.02 RELATED REQUIREMENTS**

- A Section 081113 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.

#### **1.03 REFERENCE STANDARDS**

- A 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.
- B ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test 2015 (Reaffirmed 2020).
- C ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers 2005 (Reapproved 2019).
- D ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- E ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.
- F ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.
- G GANA (GM) - GANA Glazing Manual 2022.
- H GANA (SM) - GANA Sealant Manual 2008.
- I GANA (LGRM) - Laminated Glazing Reference Manual 2019.
- J IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use 1990 (2016).

#### **1.04 SUBMITTALS**

- A Product Data on Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- B Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- C Certificate: Certify that products of this section meet or exceed specified requirements.
- D Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

#### **1.05 QUALITY ASSURANCE**

- A Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods.
- B Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

## **1.06 FIELD CONDITIONS**

- A Do not install glazing when ambient temperature is less than 40 degrees F.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A Float Glass Manufacturers:

1. Guardian Glass, LLC: [www.guardianglass.com/#sle](http://www.guardianglass.com/#sle).
2. Pilkington North America Inc: [www.pilkington.com/na/#sle](http://www.pilkington.com/na/#sle).
3. Vitro Architectural Glass (formerly PPG Glass): [www.vitroglazings.com/#sle](http://www.vitroglazings.com/#sle).

### **2.02 GLASS MATERIALS**

- A Float Glass: Provide float glass based glazing unless otherwise indicated.

1. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
2. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

### **2.03 GLAZING UNITS**

- A Monolithic Safety Glazing: Non-fire-rated.

1. Applications:
  - a. Glazed lites in doors, except fire doors.
  - b. Other locations required by applicable federal, state, and local codes and regulations.
  - c. Other locations indicated on drawings.
2. Glass Type: Fully tempered safety glass as specified.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.

### **2.04 GLAZING COMPOUNDS**

- A Butyl Sealant: Single component; ASTM C920 Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.

- B Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

- C Manufacturers:

1. Dow Corning Corporation: [www.dowcorning.com/construction/#sle](http://www.dowcorning.com/construction/#sle). Dow Corning Corporation: [www.dowcorning.com/construction/#sle](http://www.dowcorning.com/construction/#sle).
2. Pecora Corporation: [www.pecora.com/#sle](http://www.pecora.com/#sle).
3. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).

### **2.05 ACCESSORIES**

- A Setting Blocks: Neoprene, with 80 to 90 Shore A durometer hardness; ASTM C864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

- B Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option I. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit

application, self adhesive on one face.

- C Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.

### **PART 3 EXECUTION**

#### **3.01 VERIFICATION OF CONDITIONS**

- A Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B Verify that the minimum required face and edge clearances are being provided.
- C Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- D Verify that sealing between joints of glass framing members has been completed effectively.
- E Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

#### **3.02 PREPARATION**

- A Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

#### **3.03 INSTALLATION, GENERAL**

- A Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- C Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

#### **3.04 CLEANING**

- A Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B Remove nonpermanent labels immediately after glazing installation is complete.
- C Clean glass and adjacent surfaces after sealants are fully cured.
- D Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

### **3.05 PROTECTION**

- A After installation, mark pane with an 'X' by using removable plastic tape or paste.
- B Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

**END OF SECTION**

## **SECTION 089100 LOUVERS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Louvers, frames, and accessories.

#### **1.02 REFERENCE STANDARDS**

- A AMCA 500-L - Laboratory Methods of Testing Louvers for Rating 2023.
- B AMCA 511 - Certified Ratings Program Product Rating Manual for Air Control Devices 2021, with Editorial Revision (2022).

#### **1.03 SUBMITTALS**

- A Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.
- B Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, and tolerances; head, jamb and sill details; blade configuration, screens, blank-off areas required, and frames.
- C Test Reports: Independent agency reports showing compliance with specified performance criteria.

#### **1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum three years of documented experience.

#### **1.05 WARRANTY**

- A Provide five year manufacturer's warranty against distortion, metal degradation, and connection failures of louver components.
  - 1. Finish: Include ten year coverage against degradation of exterior finish.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A Louvers:
  - 1. Basis of Design: Greenheck Fan Corporation; Model ESU-153.
  - 2. Construction Specialties, Inc: [www.c-sgroup.com/#sle](http://www.c-sgroup.com/#sle).
  - 3. Ruskin Company: [www.ruskin.com/#sle](http://www.ruskin.com/#sle).
  - 4. Or Approved Equal.

#### **2.02 LOUVERS**

- A Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
  - 1. Wind Load Resistance: Design to resist positive and negative wind load of 25 psf without damage or permanent deformation.
  - 2. Intake Louvers: Design to allow maximum of 0.01 oz/sq ft water penetration at calculated intake design velocity based on design air flow and actual free area, when tested in accordance with AMCA 500-L.
  - 3. Drainable Blades: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.

4. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.
- B Stationary Louvers: Horizontal blade, extruded aluminum construction, with intermediate mullions matching frame.
  1. Blades: Straight.
  2. Frame: 1 1/2 inches deep, channel profile; corner joints mitered and , with continuous recessed caulking channel each side.
  3. Aluminum Thickness: Frame 12 gauge, 0.0808 inch minimum; blades 12 gauge, 0.0808 inch minimum.
  4. Aluminum Finish: High performance organic coatings; finished after fabrication.

## **2.03 MATERIALS**

- A Extruded Aluminum: ASTM B221 (ASTM B221M).

## **2.04 ACCESSORIES**

- A Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.
- B Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that prepared openings and flashings are ready to receive this work and opening dimensions are as indicated on shop drawings.
- B Verify that field measurements are as indicated.

### **3.02 INSTALLATION**

- A Install louver assembly in accordance with manufacturer's instructions.
- B Coordinate with installation of flashings by others.
- C Install louvers level and plumb.
- D Set sill members and sill flashing in continuous bead of sealant.
- E Align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
- F Secure louver frames in openings with concealed fasteners.

### **3.03 CLEANING**

- A Strip protective finish coverings.
- B Clean surfaces and components.

**END OF SECTION**

**SECTION 092116**  
**GYPSUM BOARD ASSEMBLIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Gypsum wallboard.
- B Joint treatment and accessories.

**1.02 REFERENCE STANDARDS**

- A ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017 (Reapproved 2022).
- B ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board 2004 (Reapproved 2020).
- C ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.
- D ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.
- E ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.
- F GA-216 - Application and Finishing of Gypsum Panel Products 2021.

**1.03 SUBMITTALS**

- A Product Data:
  - 1. Provide data on gypsum board, accessories, and joint finishing system.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.
- B Store metal products to prevent corrosion.

**PART 2 PRODUCTS**

**2.01 BOARD MATERIALS**

- A Manufacturers - Gypsum-Based Board:
  - 1. CertainTeed Corporation: [www.certainteed.com/#sle](http://www.certainteed.com/#sle).
  - 2. Georgia-Pacific Gypsum: [www.gpgypsum.com/#sle](http://www.gpgypsum.com/#sle).
  - 3. USG Corporation: [www.usg.com/#sle](http://www.usg.com/#sle).
  - 4. Or Approved Equal.
- B Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
  - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
  - 2. Thickness:
    - a. Vertical Surfaces: 5/8 inch.
    - b. Ceilings: 5/8 inch.

**2.02 GYPSUM BOARD ACCESSORIES**

- A Finishing Accessories: ASTM C1047, extruded aluminum alloy (6063 T5) or galvanized steel sheet ASTM A924/A924M G90, unless noted otherwise.
  - 1. Types: As detailed or required for finished appearance.

- B Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
  - 1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners.
  - 2. Joint Compound: Drying type, vinyl-based, ready-mixed.
- C Nails for Attachment to Wood Members: ASTM C514.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A Verify that project conditions are appropriate for work of this section to commence.

#### **3.02 BOARD INSTALLATION**

- A Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C Installation on Wood Framing: For nonrated assemblies, install as follows:
  - 1. Single-Layer Applications: Double-nailing.

#### **3.03 INSTALLATION OF TRIM AND ACCESSORIES**

- A Corner Beads: Install at external corners, using longest practical lengths.

#### **3.04 JOINT TREATMENT**

- A Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
  - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
- B Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.

#### **3.05 TOLERANCES**

- A Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

#### **3.06 PROTECTION**

- A Protect installed gypsum board assemblies from subsequent construction operations.

**END OF SECTION**

## **SECTION 096500 RESILIENT FLOORING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Resilient tile flooring.
- B Resilient base.
- C Installation accessories.

#### **1.02 REFERENCE STANDARDS**

- A ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile 2004 (Reapproved 2018).
- B ASTM F1861 - Standard Specification for Resilient Wall Base 2021.

#### **1.03 SUBMITTALS**

- A Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- B Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- C Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- D Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Flooring Material: 20 square feet of each type and color.

#### **1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B Store all materials off of the floor in an acclimatized, weather-tight space.
- C Maintain temperature in storage area between 55 degrees F and 90 degrees F.

#### **1.06 FIELD CONDITIONS**

- A Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

### **PART 2 PRODUCTS**

#### **2.01 TILE FLOORING**

- A Vinyl Composition Tile: Homogeneous, with color extending throughout thickness.
  - 1. Manufacturers:
    - a. Armstrong Flooring; Standard Execelon Imperial Texture:  
[www.armstrongflooring.com/#sle](http://www.armstrongflooring.com/#sle).

- b. Johnsonite, a Tarkett Company: [www.johnsonite.com/#sle](http://www.johnsonite.com/#sle).
  - c. Or Approved Equal.
- 2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
- 3. Size: 12 by 12 inch.
- 4. Thickness: 0.125 inch.
- 5. Color: To be selected by Architect from manufacturer's full range.

## **2.02 RESILIENT BASE**

- A Resilient Base: ASTM F1861, Type TS, rubber, vulcanized thermoset; Style B, Cove.
  - 1. Manufacturers:
    - a. Johnsonite, a Tarkett Company: [www.johnsonite.com/#sle](http://www.johnsonite.com/#sle).
    - b. Mannington Commercial: [www.manningtoncommercial.com/#sle](http://www.manningtoncommercial.com/#sle).
    - c. Roppe Corporation: [www.roppe.com/#sle](http://www.roppe.com/#sle).
  - 2. Height: 4 inches.
  - 3. Thickness: 0.125 inch.
  - 4. Finish: Satin.
  - 5. Length: Roll.
  - 6. Color: To be selected by Architect from manufacturer's full range.
  - 7. Accessories: Premolded external corners.

## **2.03 ACCESSORIES**

- A Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
- C Moldings, Transition and Edge Strips: Same material as flooring.
- D Sealer and Wax: Types recommended by flooring manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
  - 1. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

### **3.02 PREPARATION**

- A Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

- C Prohibit traffic until filler is fully cured.
- D Clean substrate.
- E Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

### **3.03 INSTALLATION - GENERAL**

- A Starting installation constitutes acceptance of subfloor conditions.
- B Install in accordance with manufacturer's written instructions.
- C Adhesive-Applied Installation:
  - 1. Spread only enough adhesive to permit installation of materials before initial set.
  - 2. Fit joints and butt seams tightly.
  - 3. Set flooring in place, press with heavy roller to attain full adhesion.
- D Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- E Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
  - 1. Resilient Strips: Attach to substrate using adhesive.
- F Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

### **3.04 INSTALLATION - TILE FLOORING**

- A Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
- B Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.
- C Install square tile to ashlar pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

### **3.05 INSTALLATION - RESILIENT BASE**

- A Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C Install base on solid backing. Bond tightly to wall and floor surfaces.

### **3.06 CLEANING**

- A Remove excess adhesive from floor, base, and wall surfaces without damage.
- B Clean in accordance with manufacturer's written instructions.

### **3.07 PROTECTION**

- A Prohibit traffic on resilient flooring for 48 hours after installation.

**END OF SECTION**

## **SECTION 099113 EXTERIOR PAINTING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Surface preparation.
- B Field application of paints.
- C Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 5. Non-metallic roofing and flashing.
  - 6. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
  - 7. Floors, unless specifically indicated.
  - 8. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
  - 9. Exterior insulation and finish system (EIFS).
  - 10. Glass.
  - 11. Concealed pipes, ducts, and conduits.

#### **1.02 REFERENCE STANDARDS**

- A 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.
- B MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.
- C SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).
- D SSPC-SP 6 - Commercial Blast Cleaning 2007.

#### **1.03 SUBMITTALS**

- A Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47).
  - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
  - 4. Manufacturer's installation instructions.
- B Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.

1. Where sheen is specified, submit samples in only that sheen.
- C Manufacturer's Instructions: Indicate special surface preparation procedures.
- D Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- E Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  1. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
  2. Label each container with color in addition to the manufacturer's label.

#### **1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### **1.06 FIELD CONDITIONS**

- A Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.
- B Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- E Provide lighting level of 80 ft candles measured mid-height at substrate surface.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B Paints:
  1. Base Manufacturer: Sherwin-Williams Company.
  2. Or Approved Equal.
- C Primer Sealers: Same manufacturer as top coats.

#### **2.02 PAINTS AND FINISHES - GENERAL**

- A Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
  3. Supply each paint material in quantity required to complete entire project's work from a single production run.
  4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.
- B Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
  2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C Flammability: Comply with applicable code for surface burning characteristics.
- D Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.

### **2.03 PAINT SYSTEMS - EXTERIOR**

- A Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including primed metal.
1. Two top coats and one coat primer.
  2. Top Coat(s): Exterior Latex.
    - a. Products:
      - 1) Sherwin-Williams A-100 Exterior Latex Flat.
      - 2) Or Approved Equal.
  3. Top Coat Sheen:
    - a. Flat: MPI gloss level 1; use this sheen at all locations.
  4. Primer: As recommended by top coat manufacturer for specific substrate.

### **2.04 PRIMERS**

- A Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Alkali Resistant Water Based Primer; MPI #3.

### **2.05 ACCESSORY MATERIALS**

- A Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted

surfaces.

- B Patching Material: Latex filler.
- C Fastener Head Cover Material: Latex filler.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Do not begin application of paints and finishes until substrates have been properly prepared.
- B Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D Test shop-applied primer for compatibility with subsequent cover materials.

### **3.02 PREPARATION**

- A Clean surfaces thoroughly and correct defects prior to application.
- B Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D Seal surfaces that might cause bleed through or staining of topcoat.
- E Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F Ferrous Metal:
  - 1. Solvent clean according to SSPC-SP 1.
  - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
  - 3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 Commercial Blast Cleaning. Protect from corrosion until coated.

### **3.03 APPLICATION**

- A Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C Apply each coat to uniform appearance.
- D Sand metal surfaces lightly between coats to achieve required finish.
- E Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

### **3.04 CLEANING**

- A Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

### **3.05 PROTECTION**

- A Protect finishes until completion of project.
- B Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

## **SECTION 099123 INTERIOR PAINTING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Surface preparation.
- B Field application of paints.
- C Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
  - 5. Floors, unless specifically indicated.
  - 6. Glass.
  - 7. Concealed pipes, ducts, and conduits.

#### **1.02 REFERENCE STANDARDS**

- A 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.
- B ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.
- C MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.
- D SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).
- E SSPC-SP 6 - Commercial Blast Cleaning 2007.

#### **1.03 SUBMITTALS**

- A Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
  - 2. MPI product number (e.g., MPI #47).
  - 3. Cross-reference to specified paint system products to be used in project; include description of each system.
  - 4. Manufacturer's installation instructions.
- B Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
  - 1. Where sheen is specified, submit samples in only that sheen.
- C Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- D Manufacturer's Instructions: Indicate special surface preparation procedures.

- E Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- F Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
  - 2. Label each container with color in addition to the manufacturer's label.

#### **1.04 QUALITY ASSURANCE**

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### **1.06 FIELD CONDITIONS**

- A Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.
- D Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- E Provide lighting level of 80 fc measured mid-height at substrate surface.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B Paints:
  - 1. Base Manufacturer: Sherwin-Williams Company.
  - 2. Behr Process Corporation: [www.behr.com/#sle](http://www.behr.com/#sle).
  - 3. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
- C Primer Sealers: Same manufacturer as top coats.

#### **2.02 PAINTS AND FINISHES - GENERAL**

- A Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
  - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
  3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
  4. Supply each paint material in quantity required to complete entire project's work from a single production run.
  5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
  2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- D Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.
  2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
  3. Extend colors to surface edges; colors may change at any edge as directed by Architect.

### **2.03 PAINT SYSTEMS - INTERIOR**

- A Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete masonry units, wood, shop primed steel, and hollow metal doors and frames.
1. Two top coats and one coat primer.
  2. Top Coat(s): Institutional Low Odor/VOC Interior Latex; MPI #143, 144, 145, 146, 147, or 148.
    - a. Products:
      - 1) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Flat.
      - 2) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Low Sheen. (MPI #144)
  3. Top Coat Sheen:
    - a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
    - b. Eggshell: MPI gloss level 3; use this sheen at all locations.
  4. Primer: As recommended by top coat manufacturer for specific substrate.

- B Paint I-OP-FL - Wood Floors to be Painted.
  - 1. Two top coats and one coat primer.
  - 2. Top Coat(s): Latex Floor Paint, Low Gloss; MPI #60.
    - a. Products:
      - 1) Sherwin-Williams Tread-Plex Acrylic Floor Coating. (MPI #60)
  - 3. Top Coat Sheen:
    - a. Eggshell: MPI gloss level 3; use this sheen at all locations.
  - 4. Primer: As recommended by top coat manufacturer for specific substrate.

## **2.04 PRIMERS**

- A Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
  - 1. Interior/Exterior Latex Block Filler; MPI #4.
    - a. Products:
      - 1) Sherwin-Williams Loxon Block Surfacer. (MPI #4)

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Do not begin application of paints and finishes until substrates have been adequately prepared.
- B Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D Test shop-applied primer for compatibility with subsequent cover materials.
- E Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
  - 1. Gypsum Wallboard: 12 percent.
  - 2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
  - 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

### **3.02 PREPARATION**

- A Clean surfaces thoroughly and correct defects prior to application.
- B Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D Seal surfaces that might cause bleed through or staining of topcoat.
- E Masonry:
  - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
  - 2. Prepare surface as recommended by top coat manufacturer.
- F Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

G Ferrous Metal:

1. Solvent clean according to SSPC-SP 1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 Commercial Blast Cleaning. Protect from corrosion until coated.

H Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

I Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

J Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

### **3.03 APPLICATION**

- A Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- C Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E Sand wood and metal surfaces lightly between coats to achieve required finish.
- F Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

### **3.04 CLEANING**

- A Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

### **3.05 PROTECTION**

- A Protect finishes until completion of project.
- B Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

## **SECTION 101423 PANEL SIGNAGE**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Panel signage.

#### **1.02 REFERENCE STANDARDS**

- A ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

#### **1.03 SUBMITTALS**

- A Product Data: Manufacturer's product literature for each type of panel sign, indicating styles, font, foreground and background colors, locations, and overall dimensions of each sign.
- B Shop Drawings:
  - 1. Include dimensions, locations, elevations, materials, text and graphic layout, attachment details, and schedules.
- C Selection Samples: Where colors, materials, and finishes are not specified, submit two sets of color selection charts or chips.
- D Manufacturer's Installation Instructions: Include installation templates and attachment devices.
- E Manufacturer's qualification statement.

#### **1.04 QUALITY ASSURANCE**

- A Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A Package signs as required to prevent damage before installation.
- B Package room and door signs in sequential order of installation, labeled by floor or building.
- C Store tape adhesive at normal room temperature.

#### **1.06 FIELD CONDITIONS**

- A Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B Maintain minimum ambient temperature during and after installation.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A Panel Signage:
  - 1. Best Sign Systems, Inc: [www.bestsigns.com/#sle](http://www.bestsigns.com/#sle).
  - 2. FASTSIGNS International, Inc: [www.fastsigns.com/#sle](http://www.fastsigns.com/#sle).
  - 3. Mohawk Sign Systems, Inc: [www.mohawksign.com/#sle](http://www.mohawksign.com/#sle).
  - 4. Or Approved Equal.

#### **2.02 REGULATORY REQUIREMENTS**

- A Accessibility Requirements: Comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting

requirements, comply with the most restrictive requirements.

### **2.03 PANEL SIGNAGE**

#### **A Panel Signage:**

1. Application: Room and door signs.
2. Description: Flat signs with engraved panel media, tactile characters.
3. Sign Size: As indicated on drawings.
4. Total Thickness: 1/8 inch.
5. Sign Edges: Squared.
6. Corners: Squared.
7. Color and Font, unless otherwise indicated:
  - a. Character Font: Helvetica, Arial, or other sans serif font.
  - b. Character Case: Upper case only.
  - c. Background Color: As selected from manufacturer's standard colors.
  - d. Character Color: Contrasting color.
8. Material: Laminated colored plastic engraved through face to expose core as background color.
9. Material: One-piece injection molded acrylic plastic with raised letters and braille.
10. Profile: Flat panel without frame.
11. Tactile Letters: Raised 1/32 inch minimum.
12. Braille: Grade II, ADA-compliant.
13. One-Sided Wall Mounting: Tape adhesive.

### **2.04 SIGNAGE APPLICATIONS**

#### **A Room and Door Signs:**

1. Rest Rooms: Identify with pictograms, the name "UNISEX", and braille.
2. Exit: Identify with name "EXIT" and braille.

### **2.05 ACCESSORIES**

#### **A Tape Adhesive: Double-sided tape, permanent adhesive.**

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that substrate surfaces are ready to receive work.
- B Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

### **3.02 INSTALLATION**

- A Install in accordance with manufacturer's instructions.
- B Install with horizontal edges level.
- C Locate panel signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

**END OF SECTION**

**SECTION 102800**  
**TOILET, BATH, AND LAUNDRY ACCESSORIES - ASI**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Grab bars.
- B Mirrors.
- C Paper towel dispensers.
- D Soap and hand sanitizer dispensers.
- E Toilet tissue dispensers.

**1.02 REFERENCE STANDARDS**

- A ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service 2022.
- B ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2023.
- C ASTM C1036 - Standard Specification for Flat Glass 2021.
- D ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror 2018.

**1.03 ADMINISTRATIVE REQUIREMENTS**

- A Coordinate work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

**1.04 SUBMITTALS**

- A Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- B Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A Basis of Design Manufacturer: American Specialties, Inc:  
[www.americanspecialties.com/#sle](http://www.americanspecialties.com/#sle).
- B Manufacturers:
  - 1. Or Approved Equal .

**2.02 GRAB BARS**

- A Grab Bars: Type 304 stainless steel.
  - 1. Standard Duty Grab Bars:
    - a. Push/Pull Point Load: 250 lbf, minimum.
    - b. OD: As indicated in product listing.
    - c. Tubing Thickness: 18 gauge, 0.05 inch.
    - d. Flange Mounting: As indicated in product listing.
    - e. Flange Thickness: 11 gauge, 0.125 inch
    - f. Clearance: 1-1/2 inch clearance between wall and inside of grab bar.
    - g. Length and Configuration: As indicated in product listing.
    - h. Products:

- 1) Model 3701-18 - 18 inch length - Snap Flange, 1-1/4 inch OD, Smooth - Straight Grab Bar.
- 2) Model 3701-36W - 36 inch length - Snap Flange, 1-1/4 inch OD - Straight Grab Bar, White Powder-Coated Finish.
- 3) Model 3801-48 - 48 inch length - Snap Flange, 1-1/2 inch OD, Smooth - Straight Grab Bar.

### **2.03 MIRRORS**

- A Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass, ASTM C1036.
1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
  2. Channel Frame: One piece roll formed 20 gauge, 0.0375 inch, 1/2 inch by 1/2 inch Type 304 stainless steel channel that encases mirror and backing with tight mitered corners, and tamperproof hanging system; satin finish.
  3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
  4. Products:
    - a. Model 0620 Series - Stainless Steel Chan-Lok Frame - Plate Glass Mirror-Channel Frame.

### **2.04 PAPER TOWEL DISPENSERS**

- A Paper Towel Dispenser: Folded paper type, stainless steel, with viewing slots on sides as refill indicator, tumbler lock.
1. Mounting: Surface.
  2. Stainless Steel Thickness: As indicated on Technical Data Sheet for selected ASI model.
  3. Folded Towel Dispenser Capacity: 400 C-fold.
  4. Products:
    - a. Model 0210 - Traditional Collection - Paper Towel Dispenser - Multi, C-Fold - Surface-mounted.

### **2.05 SOAP AND HAND SANITIZER DISPENSERS**

- A Automated Soap Dispenser: Foam soap dispenser, with container concealed below deck.
1. Mounting: Surface.
  2. Material and Finish: As indicated in product listing.
  3. Minimum Capacity: As indicated in product listing.
  4. Products:
    - a. Model 0362 - Automatic Soap Dispenser - Liquid - Battery - Satin Stainless Steel - 30 oz - Surface-mounted.

### **2.06 TOILET TISSUE DISPENSERS**

- A Toilet Tissue Dispenser: Surface-mounted bracket type, stainless steel, spindleless type for tension spring delivery designed to prevent theft of tissue roll.
1. Capacity: As indicated in product listing.
  2. Products:

- a. Model 0264-1A - Toilet Tissue Holder - Double, Standard Rolls, Controlled Delivery - Surface-mounted.

## **2.07 MATERIALS**

- A Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
- B Stainless Steel Sheet: ASTM A666, Type 304.
- C Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- D Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- E Adhesive: Two component epoxy type, waterproof.
- F Fasteners, Screws, and Bolts: Hot dip galvanized; tamperproof; security type.

## **2.08 FINISHES**

- A Stainless Steel: Satin finish, unless otherwise noted.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A Verify existing conditions before starting work.
- B Verify exact location of accessories for installation.
- C Verify that field measurements are as indicated on product data.

## **3.02 INSTALLATION**

- A Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B Install plumb and level, securely and rigidly anchored to substrate.
- C Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

## **3.03 PROTECTION**

- A Protect installed accessories from damage due to subsequent construction operations.

**END OF SECTION**

**SECTION 104400**  
**FIRE PROTECTION SPECIALTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Fire extinguishers.
- B Accessories.

**1.02 REFERENCE STANDARDS**

- A FM (AG) - FM Approval Guide Current Edition.
- B NFPA 10 - Standard for Portable Fire Extinguishers 2022.
- C UL (DIR) - Online Certifications Directory Current Edition.

**1.03 SUBMITTALS**

- A Product Data: Provide extinguisher operational features, extinguisher ratings and classifications, anchorage details, and installation instructions.
- B Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

**1.04 FIELD CONDITIONS**

- A Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A Fire Extinguishers:
  - 1. Activar Construction Products Group, Inc. - JL Industries:  
[www.activarcpg.com/#sle](http://www.activarcpg.com/#sle).
  - 2. Kidde, a unit of United Technologies Corp: [www.kidde.com/#sle](http://www.kidde.com/#sle).
  - 3. Potter-Roemer: [www.potterroemer.com/#sle](http://www.potterroemer.com/#sle).
  - 4. Or Approved Equal.

**2.02 FIRE EXTINGUISHERS**

- A Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
  - 1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.
- B Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
  - 1. Cartridge Operated: Spun shell.
  - 2. Class: A:B:C type.
  - 3. Size: 2.5 pound.
  - 4. Finish: Baked polyester powder coat, color as selected.
  - 5. Temperature range: Minus 65 degrees F to 120 degrees F.

**2.03 ACCESSORIES**

- A Extinguisher Brackets: Formed steel, galvanized and enamel finished.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify existing conditions before starting work.

### **3.02 INSTALLATION**

- A Install in accordance with manufacturer's instructions.
- B Secure rigidly in place.
- C Place extinguishers on wall brackets.

**END OF SECTION**

## **SECTION 123600 COUNTERTOPS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A Countertops for architectural cabinet work.

#### **1.02 RELATED REQUIREMENTS**

- A Section 064100 - Architectural Wood Casework.

#### **1.03 REFERENCE STANDARDS**

- A ANSI A208.1 - American National Standard for Particleboard 2022.
- B ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- C AWI (QCP) - Quality Certification Program Current Edition.
- D AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- E AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- F NEMA LD 3 - High-Pressure Decorative Laminates 2005.
- G PS 1 - Structural Plywood 2019.

#### **1.04 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.
  - 3. Specimen warranty.
- B Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.
- C Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

#### **1.05 QUALITY ASSURANCE**

- A Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.
- B Quality Certification:
  - 1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: [www.awiqcp.org/#sle](http://www.awiqcp.org/#sle).

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A Store products in manufacturer's unopened packaging until ready for installation.
- B Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### **1.07 FIELD 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.

## **PART 2 PRODUCTS**

### **2.01 COUNTERTOPS**

- A Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.
  - 1. Laminate Sheet: NEMA LD 3, Grade HGS, 0.048 inch nominal thickness.
    - a. Manufacturers:
      - 1) Formica Corporation: [www.formica.com/#sle](http://www.formica.com/#sle).
      - 2) Wilsonart: [www.wilsonart.com/#sle](http://www.wilsonart.com/#sle).
      - 3) Or Approved Equal.
    - b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
    - c. Finish: Matte or suede, gloss rating of 5 to 20.
    - d. Surface Color and Pattern: As selected by Architect from the manufacturer's full line.
  - 2. Exposed Edge Treatment: Square, substrate built up to minimum 1-1/4 inch thick; covered with matching laminate.
  - 3. Back Splashes: Same material, same construction.
  - 4. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Custom Grade.

### **2.02 MATERIALS**

- A Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
- B Particleboard for Supporting Substrate: ANSI A208.1 Grade 2-M-2, 45 pcf minimum density; minimum 3/4 inch thick; join lengths using metal splines.
- C Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

### **2.03 FABRICATION**

- A Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
  - 1. Join lengths of tops using best method recommended by manufacturer.
  - 2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
  - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
  - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
  - 2. Height: 4 inches, unless otherwise indicated.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Do not begin installation until substrates have been properly prepared.
- B If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

### **3.02 PREPARATION**

- A Clean surfaces thoroughly prior to installation.
- B Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.03 INSTALLATION**

- A Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.
- C Seal joint between back/end splashes and vertical surfaces.

### **3.04 TOLERANCES**

- A Variation From Horizontal: 1/8 inch in 10 feet, maximum.
- B Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- C Field Joints: 1/8 inch wide, maximum.

### **3.05 CLEANING**

- A Clean countertops surfaces thoroughly.

### **3.06 PROTECTION**

- A Protect installed products until completion of project.
- B Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**